

# **SIEMENS**

## **FC700A**

### **Fire detection system**

#### **Planning**

**Fire & Security Products**

Siemens Building Technologies

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# 1 About this document

## Purpose

This document describes the project planning of the hardware modules of the control unit FC700A. The consistent adherence to these instructions is a prerequisite for a safe application.

## Scope

This document contains information of all FC700A components, including part numbers for ordering.

## Target group

This product documentation and the work instructions are aimed at the following persons, who have a particular function and have the corresponding training and qualification.

Group of persons	Activity	Qualification
Project Manager	The project manager is responsible for the local project management. He co-ordinates the schedules of all groups of people working on a project as well as resources. He also continuously obtains the technical information required for project realization.	He has had the technical training appropriate to his function and the size of a project or the product line used in the project and has attended the training courses for project managers at the supplier's works.

## Reference documents

Information in	Document
007831	Hardware description
007827	Installation housing H26... /H28...
007832	Visualizer Customizing / End user (not yet available)
007835	Operating instructions
007828	Installation / Hardware Commissioning
007833	Maintenance instructions
007894	Templates for inscription stripes
007895	Operating platform for Tools

## Work and operational safety



Before personnel begin work on the system they must have read and understood the related operating instructions, in particular chapter 2 "Safety regulations".

## Disregard of the safety regulations

Before they are delivered, products are tested to ensure they function correctly when used properly. Siemens disclaims all liability for damage or injuries caused by the incorrect application of the instructions or disregard of warnings of danger contained in the documentation. This applies in particular to:

- Personal injuries or damage caused by improper use and incorrect use;
- Personal injuries or damage caused by disregarding safety instructions in the documentation or on the product;
- Personal injuries or damage caused by poor maintenance or a lack of maintenance.

**Conventions**

(...)	Additional information
..)	Notes
"....." / '.....'	Definitions of designations
->	Details see page ....., chapter or document .....
<input type="checkbox"/>	Configuration sheets to fill out

**Document identification**

Place		Signification
Title page		<ul style="list-style-type: none"> <li>– System names</li> <li>– Product type</li> <li>– Document purpose</li> </ul>
Last page	bottom left bottom right	<ul style="list-style-type: none"> <li>– The document number consists of: Language, number, index</li> <li>– Version date</li> <li>– Manual</li> <li>– Register</li> </ul>

**Modification index**

Version	Date	Brief description
007836_a_en_--	03. 2004	First edition

## 2 Safety regulations

This chapter describes the danger levels and the relevant safety regulations applicable for the use of our products. Please read the work instructions as well as the chapter "About this document" thoroughly before beginning any work.

### 2.1 Signal words and symbols

#### 2.1.1 Signal words and their meaning

The danger level that is, the severity and probability of danger are indicated by the signal words listed below. Non-observance may lead to the consequences indicated:

##### **DANGER**

Imminent danger!

- May cause serious bodily injury or danger to life!

##### **WARNING**

Dangerous situation!

- May cause serious bodily injury or danger to life!

##### **CAUTION**

Possibly dangerous situation!

- May cause light injuries!

##### **NOTE**

Possibly harmful situation!

- May cause damage to the product or to objects in the immediate vicinity of the product!

#### 2.1.2 Symbols and their meaning

The symbols listed below indicate the nature and origin of the danger.



<b>Signal word</b>	General danger
--------------------	----------------



<b>Signal word</b>	Electrical voltage
--------------------	--------------------

##### **Example for a danger warning**



<b>DANGER</b> <b>External voltage</b>	Disconnect the module from power supply.
--	--



## 2.1.3 Classification and meaning of additional symbols



Tips and information



Refers to extremely important or critical decisions to be taken into account before continuing the work.

## 2.2 Safety-relevant working instructions

### Country-specific standards

The products are developed and produced in compliance with the relevant international and European safety standards. Should additional country-specific, local safety standards or regulations concerning project planning, assembly, installation, operation and disposal of the product apply in the place of operation, then these standards or regulations must also be taken into account in addition to the safety regulations mentioned in the product documentation.

### Electrical installations



#### **DANGER** **Work on electrical installations**

Any work on electrical installations may only be carried out by qualified electricians or instructed persons working under the guidance and supervision of a qualified electrician, in accordance with the electro technical regulations.

- Control units must be disconnected from the power supply during commissioning or maintenance work.
- Terminals with an external voltage supply must be provided with a sign "DANGER - External voltage".
- Mains leads to the control unit must be installed separately and provided with a clearly marked fuse.
- Earthing must be carried out in compliance with local safety regulations.
- When work is carried out in explosion-hazardous areas, the appropriate safety precautions must be taken.

### Assembly, installation, commissioning and inspection work

- If any tools or accessories such as ladders are required, safe and suitable devices must be used.
- Prevention of spurious tripping of the remote transmission must be assured.
- Always inform the fire brigade before testing the remote transmission.
- The activation of fire control installations for test purposes must not cause damage to the system or parts thereof.
- Fire control installations must only be activated after the test has been completed and the system has been handed over to the customer.
- Third party systems or devices must only be activated in the presence of the responsible person.
- When work on management stations and system terminals are performed, the safety regulations of the connected sub-systems must be observed. This especially applies when switching-off system components.
- In the case of extinguishing systems, always use the "General installation instructions" as a guideline. This guideline is available on request.

### **Testing the product operability**

- Evacuate and cordon off extinguishing sector.
- Inform people about the possibility of occurring fog and noise.
- Inform people before testing of alarm devices; take the possibility of panic reactions into account.
- Inform the alarm and fault receiving stations connected to the system before running the tests.

### **Modifications to the system design and the product**

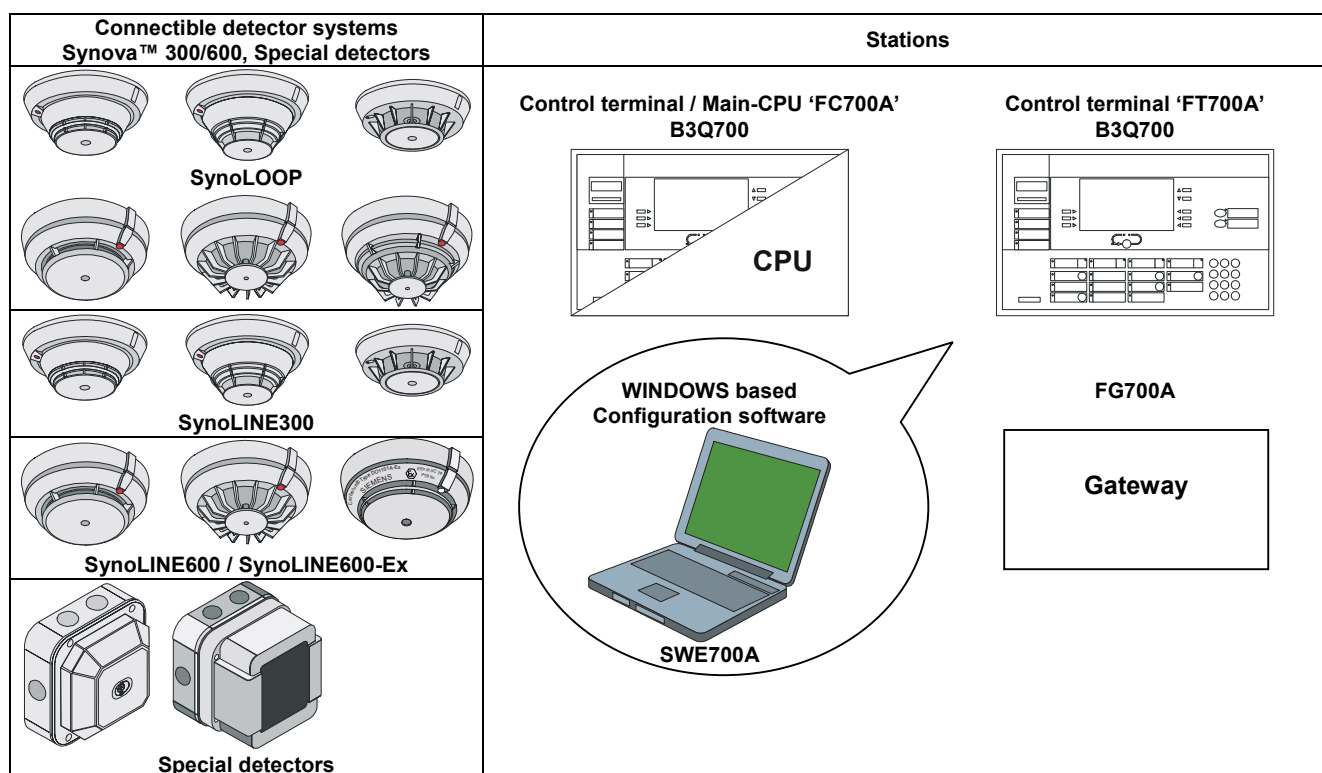
Modifications to a system or to individual products may cause faults or malfunctioning. Please request written approval from us, and the relevant authorities concerning intended system modifications and system extensions.

### **Modules and spare parts**

- Locally procured modules and spare parts must comply with the technical specifications laid down by the manufacturer. This compliance is always ensured for original spare parts supplied by us.
- Only use fuses with the specific fuse characteristics.
- Wrong battery types and improper battery exchange may introduce the danger of explosion. Only use the specified battery type or an equivalent battery type recommended by the manufacturer.
- Batteries require environmentally safe disposal. They must be handed in at the local collecting points.
- Please take into account that the extinguishing agent cylinders are pressurized and must be exchanged in compliance with the local safety regulations.

### 3 Main features

- Fire detection system for modular configuration
- Up to 1000 detectors per FC700A possible
- For the processing of addressable and conventional detectors
- Logical and physical structure totally separated
- Control console as main CPU
- Interfaces for VdS peripheral equipment, printer, host systems
- Different types of input and output modules
- Special Mimic Display terminal activating module
- Multidetector logic
- Up to 16 free selectable type of stations per C-Bus
- Comfortable operation with soft keys and large LC display
- Up to 64 independent logical AREAS (Organization levels)
- Single-AREA or multi-AREA operation
- Event memory with sub-menu / search functions
- Integrated real time clock with auxiliary battery
- Automatic summer/winter time switchover
- Integrated emergency operation function
- Flexible detector parameters setting via maintenance PC

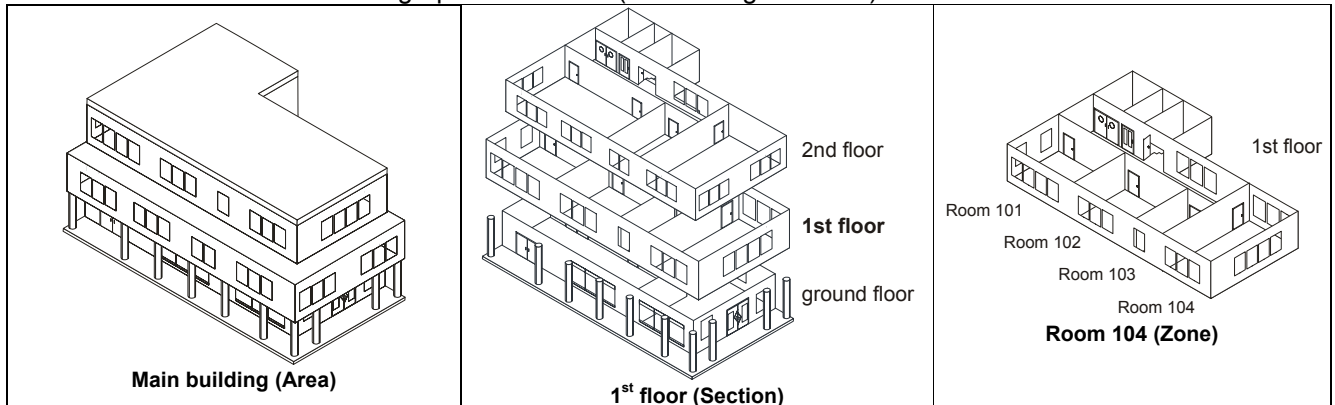


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# 5 Logical and physical structure

In the FC700A fire detection system, the logical structure is **completely separated** from the physical structure. This enables the greatest possible flexibility. Display and control terminal are based on the geographical and organizational aspects and are independent of the actual hardware installation of the detector network.

Geographical features (-> building structure)



## Logical structure

The logical structure is a configuration of the geographical features of a system. It can be modified easily to the building structure, room utilization etc.

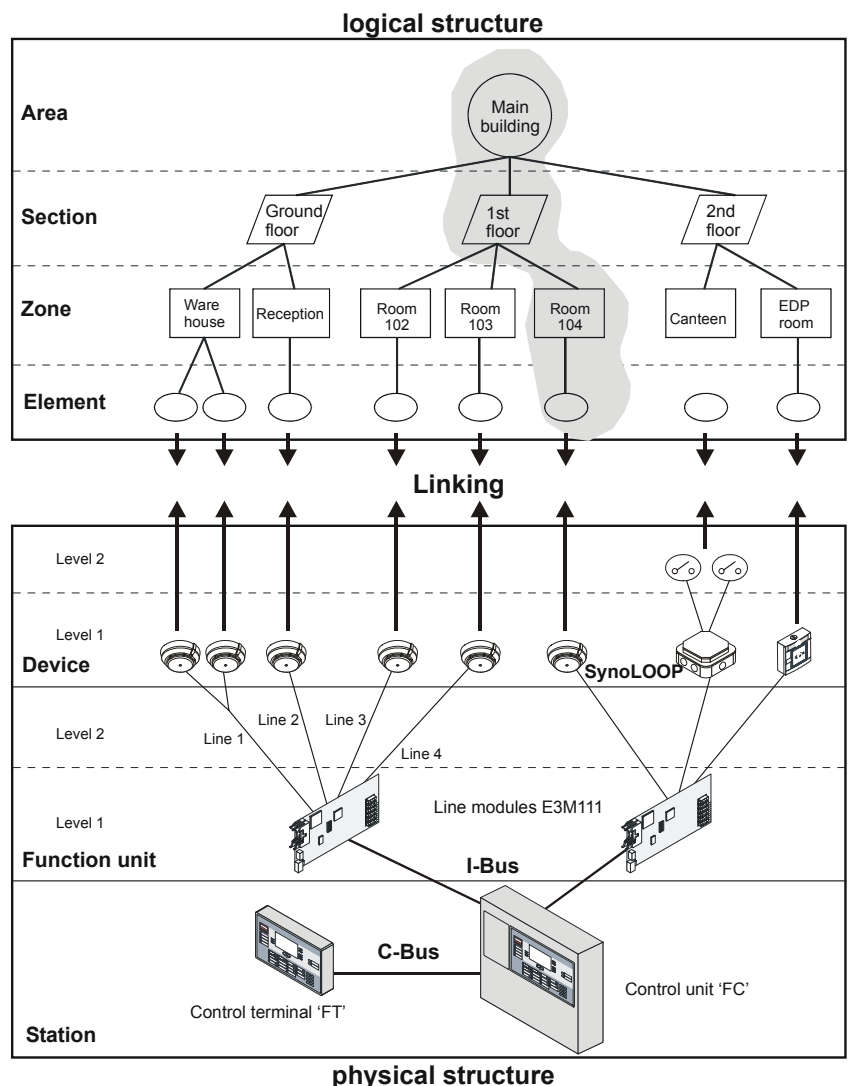
Within the same control unit the logical structure is independent of the wiring of the detector network.

## Linking

The lowest levels of both structures are linked to each other. It is determined which physical devices (e.g. detectors) are in which logical or geographical location.

## Physical structure

The physical structure is a configuration of the hardware. It results from the hardware installation. The number of used levels is depending on the type of hardware.



## 6 Bus systems

In the FC700A fire detection system there are 5 communication levels:

### I-Bus

- Internal data bus between individual modules in the control unit (line modules, control modules etc.)

### C-Bus

- Local data bus between control unit(s), control terminal(s) and Gateway(s)

### SynoLOOP and SynoLINE600

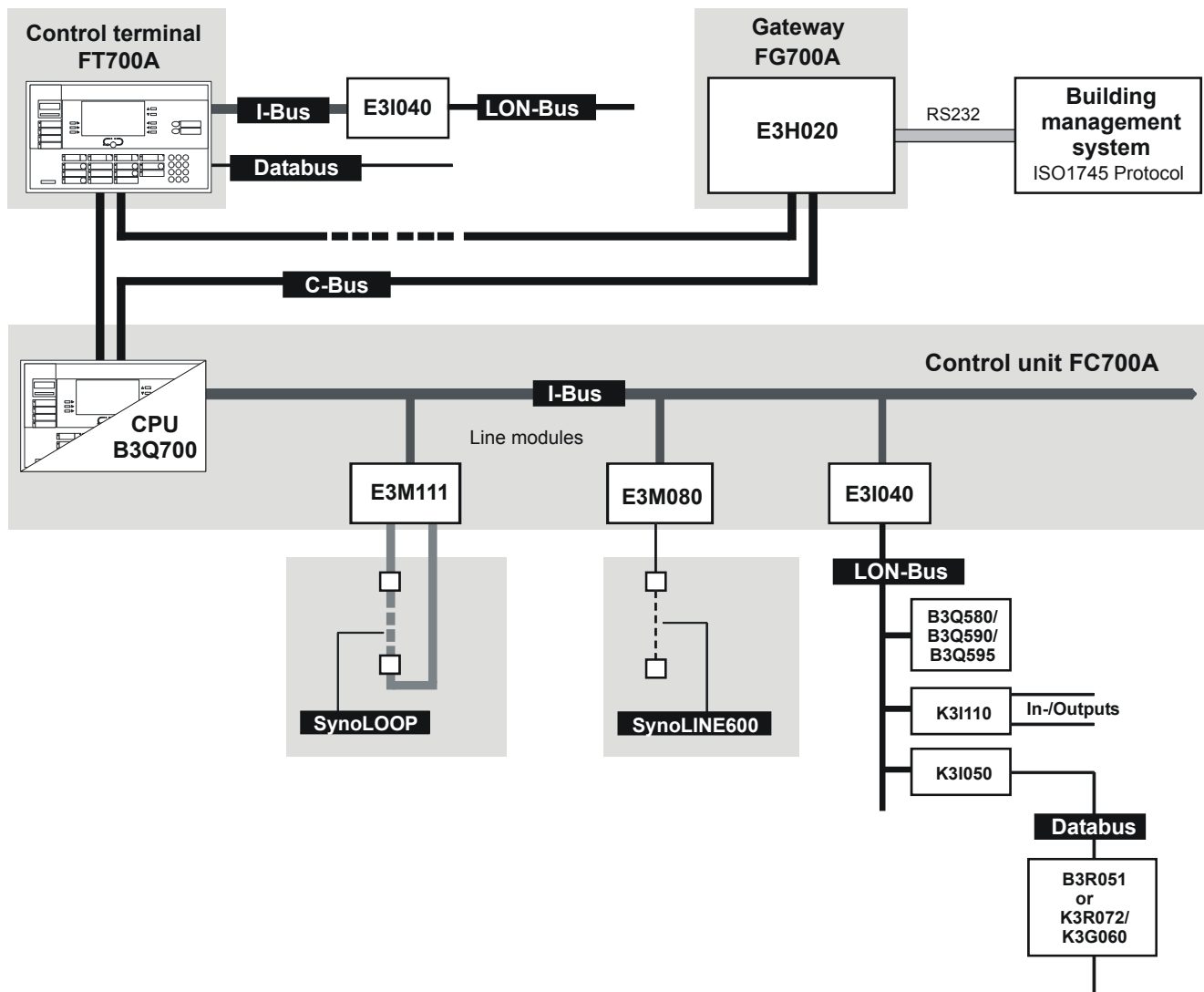
- Local detector bus; connects the detectors to the control unit

### LON-Bus

- Local data bus for floor repeater panels, mimic display converter and LON I/O card

### Data Bus

- Local data bus for parallel indicator panel, synoptic panel or relay



## 6.1 Bus overview

Features	C-Bus	I-Bus	SynoLOOP	SynoLINE600	LON-Bus	Data Bus
Field of application	Local system bus	Inside control unit	For addressable detectors	For collective detectors	Local data bus for floor indicator panels	Local data bus parallel ind. panel, synoptic panel or relay
Speed of transmission	57kBaud	1000kBaud	2 messages/sec	(Direct current signal)	78kBaud	SPI-Bus 2KHz
Length of line	Max. 1000m (G51 Ø 0,8: 1400m)	Max. 3m (only inside cabinet)	Max. 150Ω/300nF See chapter 16	Max. 150/250Ω/4μF See chapter 16	Max. 500m as free topology Max. 1000m as stub line	Max. 1000m
Number of users connected or addresses	... 16 C-Bus devices	... 16 I-Bus modules	... 128 D-Bus devices	1 address (Max. 25 detectors)	... 32 LON-Bus devices	... 24 Max. 8 addresses
Number of wires	2 (+3 wires for emergency operation)	26	2	2	2	6 (+3 wires supply)
Type of cable	Twisted 1)	Flat cable	Twisted (Un-twisted permissible)	Twisted (Un-twisted permissible)	Twisted	Twisted
Loop line	✓	–	✓	–	–	–
T-branch	–	–	–	–	✓ (See chapter 18)	–
Short-circuit proof	Yes Each user connected with line separator	–	Yes Each user connected with line separator	No	No	Yes
Network structure	Master/master	Master/slave	Master/slave	Master/slave	Master/slave	Master/slave
Scanning	Event-controlled, presence monitoring	Cyclic, Event controlled	Cyclic - typ. all 64s - Interrupt on alarm	–	Event-controlled, presence monitoring (All 60s)	Cyclic - typ. all 250ms
Principle	Serial Bus - Cerberus protocol - Collision detection - Manchester coding	C-Bus - Cerberus protocol - SPI/Motorola	Sensor/actor-Bus - Cerberus protocol 'K31' - Serial 8bit - Start-up: daisy-chain	Conventional - Current gain principle - Voltage levels	Network - Echelon Chip (LON protocol) - Cerberus specific telegram	Serial bus - Cerberus protocol

1 Calibrated according to cable impedance: 50Ω (MICC) / 110Ω (G51, Ø 0.8mm, not shielded)

## 6.2 Modifying the impedance of the various C-Bus cables

C-Bus standard cables have a characteristic impedance of 110Ω. The driver and end-of-line resistors are soldered to solder lugs and can be adapted accordingly with other characteristic impedances (see diagram chapter 6.2.1).

### 1. Explanation

A cable must be terminated with resistors. The resistance value must correspond to the impedance of the cable. Each C-Bus user has four **end-of-line resistors (Ri)**. In addition two **driver resistors (Rd)** are integrated on the p.c.b. In order that the resistors can be exchanged easily they are all soldered to solder lugs.

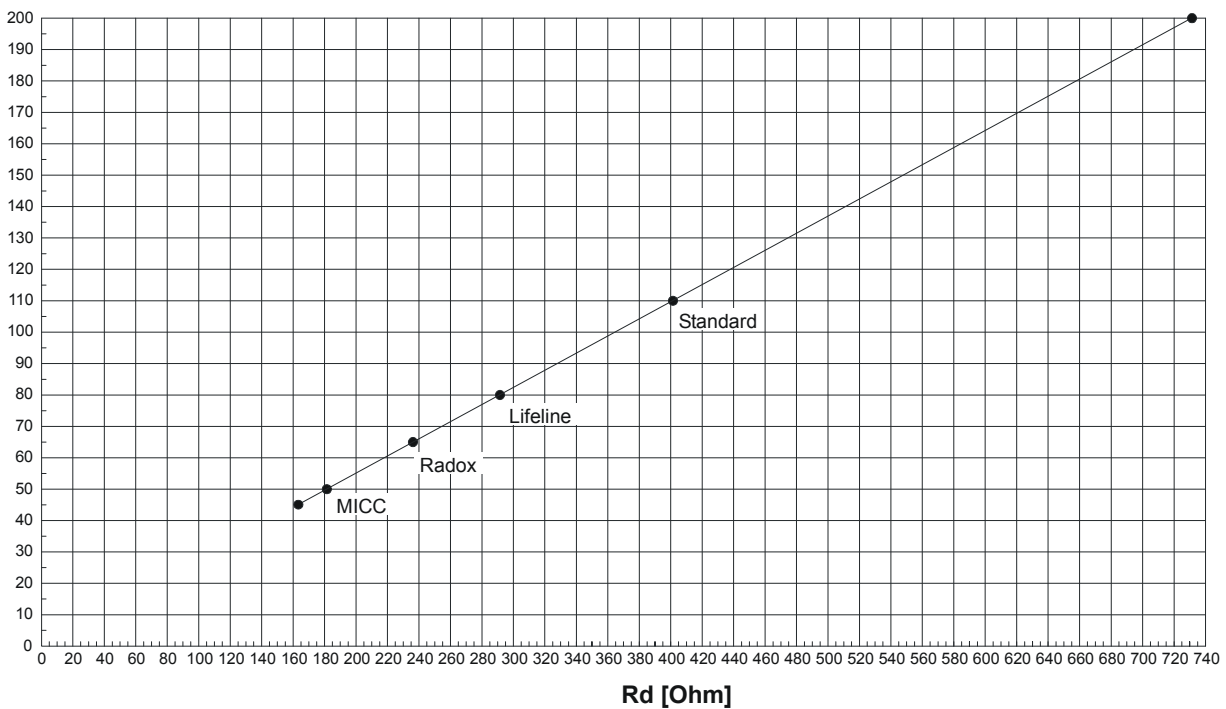
C-Bus p.c.b.	Ri	Rd
B3Q700	R31 ... R34	R49, R50
E3H020	R173, R174, R177, R178	R180, R183

The driver resistors specify the current on the C-Bus. In order that the signal on the C-Bus always has the same amplitude (1.35Vpp), the following correlation is valid:

$$R_d = R_i \times 3,65 \quad (45\Omega < R_i < 200\Omega)$$

## 6.2.1 Diagram

Ri [Ohm]



### 2. Procedure

- Request characteristic impedance of the cable from manufacturer (45Ω ... 200Ω)
- Select the value of the **Ri** the same as the value of the cable characteristic impedance and insert the four end-of-line resistors on the p.c.b.
- Insert two **driver resistors Rd = Ri x 3.65** on the p.c.b.
- Each C-Bus user must be adapted

If only the inductance and the capacitance are known for a cable, the impedance can be calculated with the aid of the following formula:

$$Z_c = \sqrt{\frac{L_c}{C_c}}$$

Zc: Cable impedance [Ω]  
 Lc: Cable inductance [μH]  
 Cc: Cable capacitance [μF]

### 3. Mixing of different types of cable

In a C-Bus loop (or stub line) only one type of cable may be used.

### 4. Operation as a stub line

If the C-Bus is operated as a stub line, two end-of-line resistors (values as for Ri) must be inserted externally at both ends of the line (default 110Ω). In the choice of other cables the above rules apply (the Ri are in this case the external end-of-line resistors).

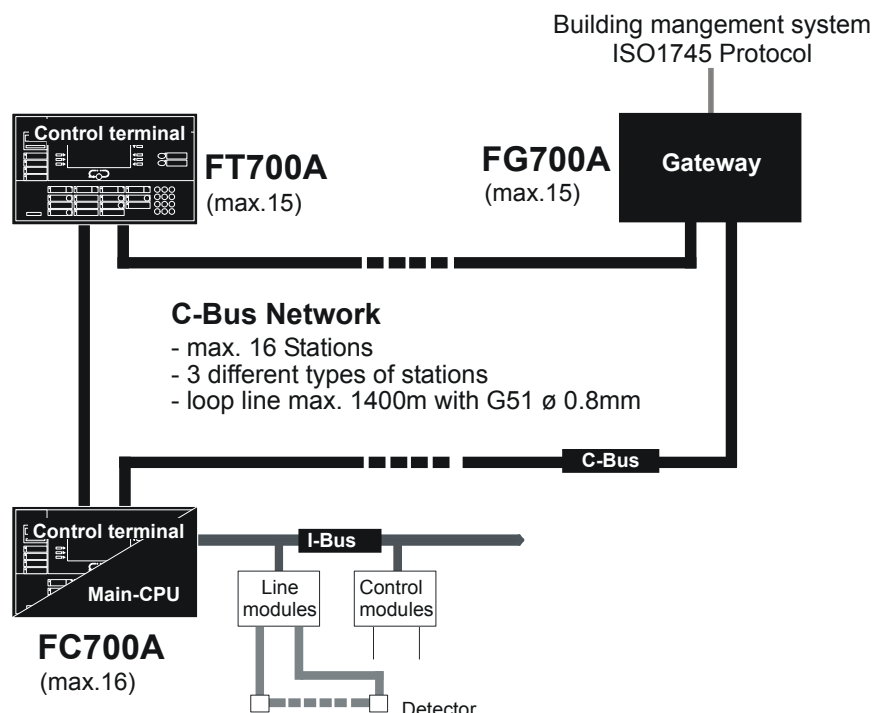
→ For further information, see document 007831



## 7 C-Bus stations

The C-Bus network contains max. 16 stations (user connected)

- Within the limits stated below (FC, FT, FG) are any stations in any arrangement possible
- Max. 64 AREAS



### 7.1 Station

- Function unit within C-Bus network
- Several stations are located in geographically dispersed cabinets

### 7.2 Types of stations

- Differentiated by function and represented by a certain module
- Certain modules can be used for different types of stations

**Types of stations available:**

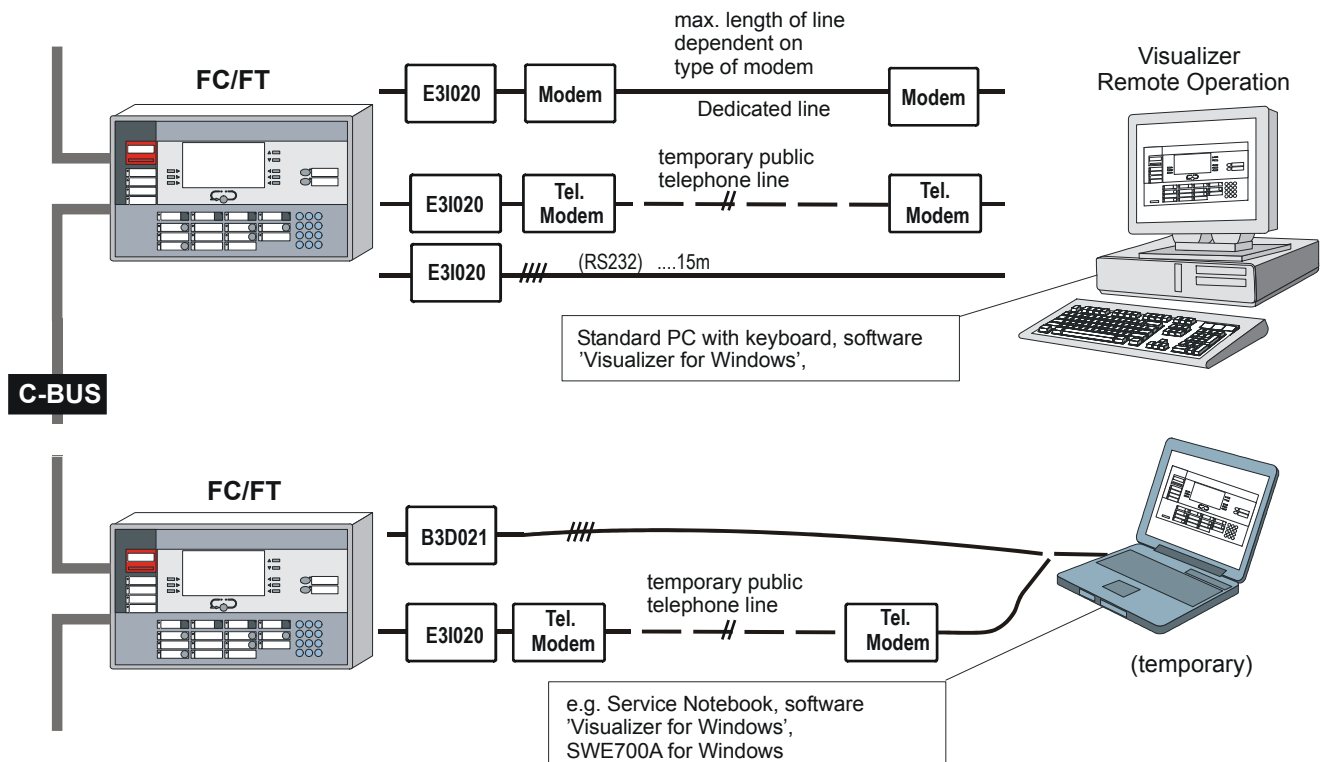
- **FC700A** Combination of main CPU and operating unit
- **FT700A** Control terminal
- **FG700A** Gateway (e.g. conversion of C-Bus Protocol -> ISO1745)

### 7.3 Hardware

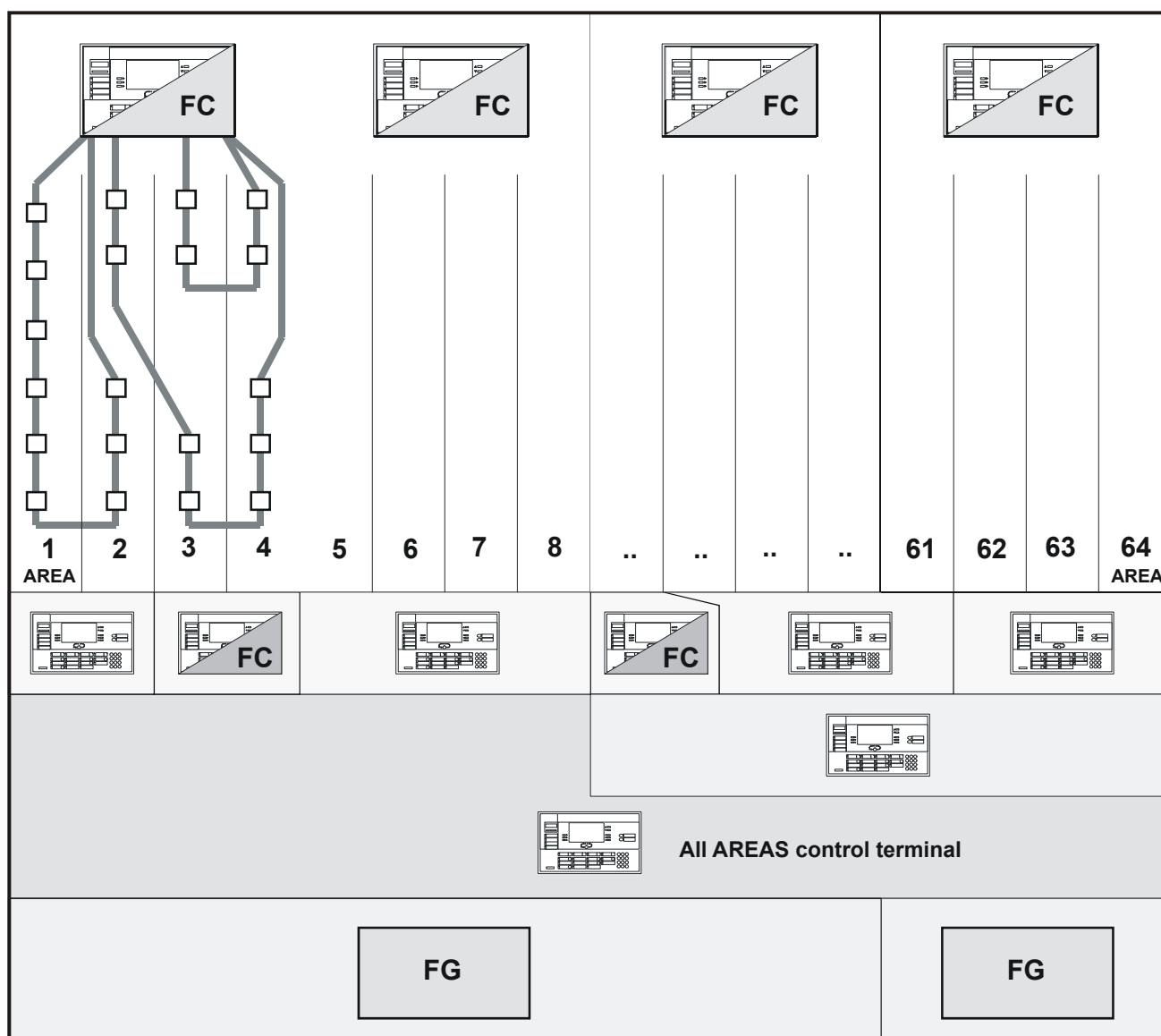
Type of station	Module	Function 'Main CPU'	Function 'Operation'	Function 'Gateway'
FC700A	B3Q700	✓	✓	–
FT700A	B3Q700	–	✓	–
FG700A	E3H020	–	–	✓

## 7.4 Visualizer for Windows remote operation software (not available yet)

- Operating platform requirements in detail see document 007895
- For details see document ..... (not available yet)



## 7.5 Logical AREAS



- Within one main CPU (FC) max. 4 AREAS can be configured
- CPUs cannot link up with AREAS of other CPUs
- CPU overlapping controls are possible
- Control terminals (FT) can be freely allocated to AREAS as required
- Visibilities on gateways (FG) shall be set per station only, not per AREA!

## 8 Limitations of C-Bus participants

This chapter describes the quantitative limits of the FC700A station.  
The selection of the station type depends on the requirements. The following variants are available:

Station type	Modules	Flash ROM (2x1024Kx8Bit) 'Program file'	SRAM Soldered	EPROM set	RAM set
FC700A	B3Q700	CIY00760	4x512Kx8Bit	–	–
FT700A	B3Q700	CTY00760	4x512Kx8Bit	–	–
FG700A	E3H020	–	–	CKQ007.60 (2x512Kx8Bit)	2 x Z3S070 (2x512Kx8Bit) (Assembly ex works)

### 8.1 Main CPU limits

#### 8.1.1 Maximum number of devices

1000 devices (with AMPK=1) per FC700A.

#### 8.1.2 Limits in the logical structure

The limits in the logical structure are given by the node-type, by the highest possible CSX number and the maximum amount of display-digits. These limits are given by the system and are independent of the memory capacity.

**Table 'Limits of the logical structure'**

Maximum rating AREAS per STATION	Maximum rating SECTIONS per AREA	Maximum rating ZONES per SECTION	Maximum rating ELEMENTS per ZONE
... 4	...255	...255	...99 International 5: ...255

#### 8.1.3 Maximum number of criteria in zones control 4 and 6

The maximum number of control zones with 16 criteria is limited by 200.



To optimize the performance of your system minimize the number of CPU-overlapping controls as much as possible.  
A maximum of 40 CPU-overlapping controls (zone control 6) are admissible per C-Bus.

#### 8.1.4 Maximum number of ZONE time channel

Max. 16 ZONES time channel are permitted per station.

## 8.1.5 Maximum number of I-Bus-modules

**Table 'Maximum number of I-Bus-modules'**

Station type	FC700A
I-Bus modules	... 16 1) ... 8 2) 3)

1) Limited by software

2) Value based on experience (depends on cabinet size and/or 5V current consumption)

3) Battery charging unit E3C011 counts as one I-Bus module

## 8.1.6 Limits of 5V supply

All I-Bus modules are supplied with 24V and 5V. The available current for the 5V, supplied from main CPU is limited:

'Main CPU'	Available current
B3Q700 / E3C011	250mA

**Table '5V-Current consumption of I-Bus modules'**

I-Bus module	Current consumption from 'Main CPU'	I-Bus module	Current consumption from 'Main CPU'
E3M080	55mA	E3G060	10mA
E3M111	25mA	E3G070	10mA
E3L020	10mA	E3C011	12mA
E3L030	35mA	E3I020*	100mA
E3G050	8mA	E3I040	70mA

\* Not an I-Bus module, but supplied via the 'Main CPU'

## 8.2 Control terminal limits (FC/FT)

### 8.2.1 Limitation of visible texts on a FC700A

The number of texts of other stations (i.e. AREAS) that can be displayed on one control terminal is limited by 14'000 texts.

To evaluate how many control panels FC700A can be displayed to one FC700A, the following calculation must be used:

$$\begin{aligned}
 & \text{Twice the number of visible sections (worst case 1000)} \\
 + & \text{ The number of visible ZONES (worst case 1000)} \\
 + & \text{ The number of visible ELEMENTS with element text (worst case 1000)} \\
 = & \text{ Number of texts per FC/FT (worst case 4000)}
 \end{aligned}$$

**Example (worst case)**

14'000 : 4000 (e.g.) = 3 fully configured FC can be displayed to one FC

### 8.2.2 Limitation of visible texts on a FT700A

The number of texts of other stations (FC700A) that can be displayed on one control terminal is limited by 14'000 texts.

To evaluate how many control panels FC700A can be displayed to one FT700A, the following calculation must be used:

$$\begin{aligned}
 & \text{Twice the number of visible sections (worst case 1000)} \\
 + & \text{ The number of visible ZONES (worst case 1000)} \\
 + & \text{ The number of visible ELEMENTS with element text (worst case 1000)} \\
 = & \text{ Number of texts per FC/FT (worst case 4000)}
 \end{aligned}$$

**Example (worst case)**

30'000 : 4000 (e.g.) = 7 fully configured FC can be displayed to one FT

## **8.3 Gateway limits (FG)**

---

Via one gateway a maximum of 8 C-Bus stations (FC700A) can be addressed.

If more than 8 C-Bus stations (FC700A) are present, they must be split up on two gateways.

Also for special applications, more than two gateways can be configured.

Visibilities of C-Bus stations (FC700A) on gateways must be set station wise, not area wise!

## 9 Specify hardware required

---

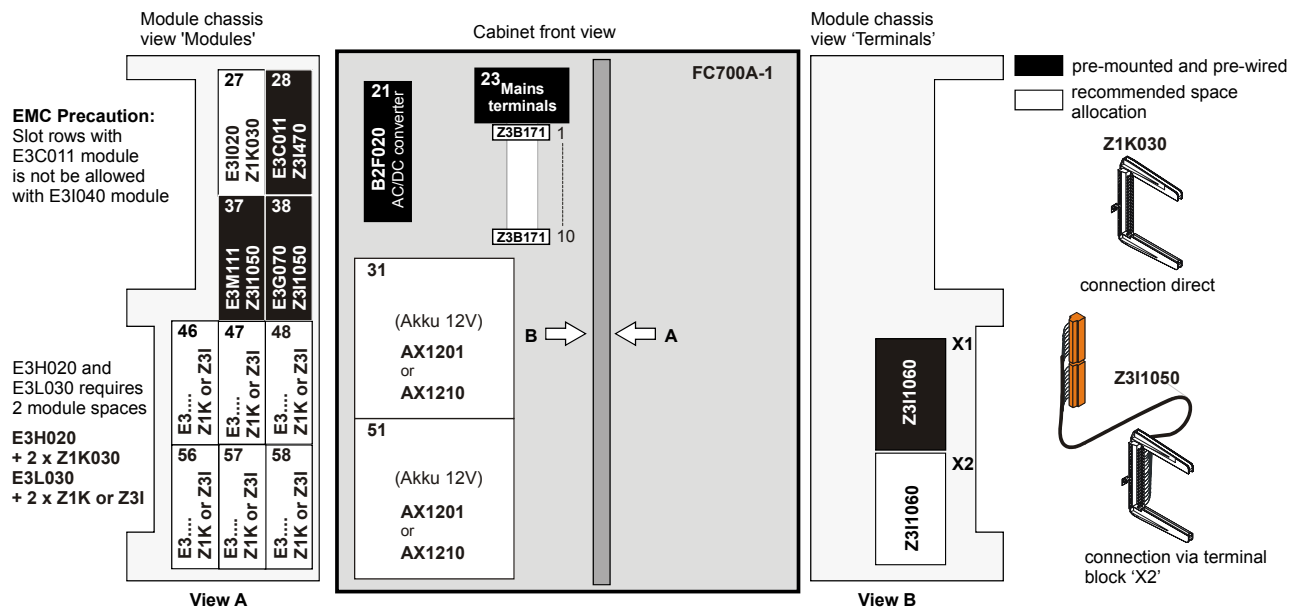
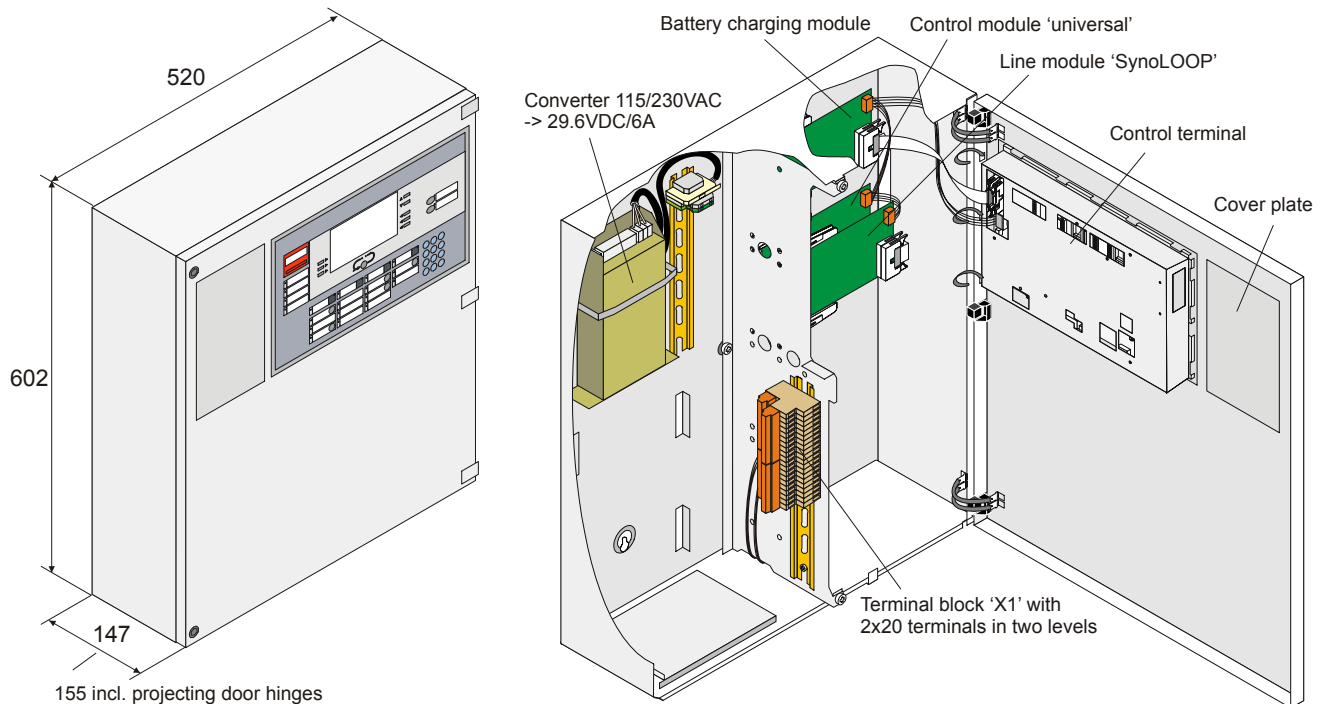
In order to be able to specify the hardware required, system key data must be specified according the following procedure:

1. Specify number and type of detection lines
  - Dependent on:
    - Detector series
    - Number of detectors, input and output modules
    - Building structure
2. Specify number and type of fire control installations
  - Dependent on:
    - The fire protection installations to be activated
    - Location of the contacts (centralized or decentralized)
    - Individual types of contact (250VAC/10A or 30VDC/1A)
3. Specify number of operating units
  - Dependent on:
    - Operating concept
    - Parallel indicator panels, fire department control panels
4. Specify Accessories required
  - Dependent on:
    - Printer interface and printer
    - Remote transmission equipment
    - Gateway, etc.
5. Specify emergency power supply battery capacity
  - Dependent on:
    - Total quiescent current
    - Required emergency current operating period (according to country)
    - Type of remote transmission
6. Provide configuration sheet/sheets (see chapter 29)
  - Dependent on:
    - Select sheets corresponding to the configuration
    - Complete everything

# 10 Control unit FC700A

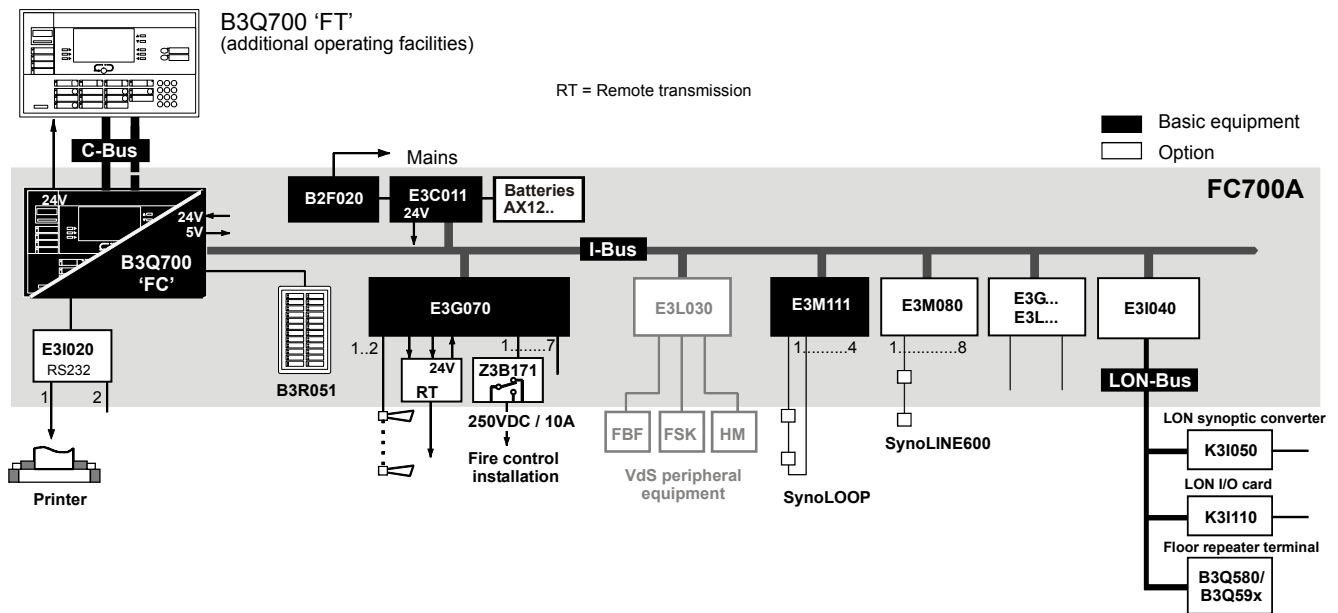
## 10.1 Configuration

- Pre-assembled compact control unit
- E3G070 and E3M111 are pre-wired on terminal block 'X1'
- Place for additional terminal block 'X2', modules, relay and batteries
- Batteries as required either 2x 12V/15Ah or 2x12V/27Ah
- Control terminal built into front terminal (also serves as main CPU)
- Installation of parallel indicator panel B3R051 possible
- Door right hinged, can be locked with 2 Allen screws





## 10.2 Block diagram

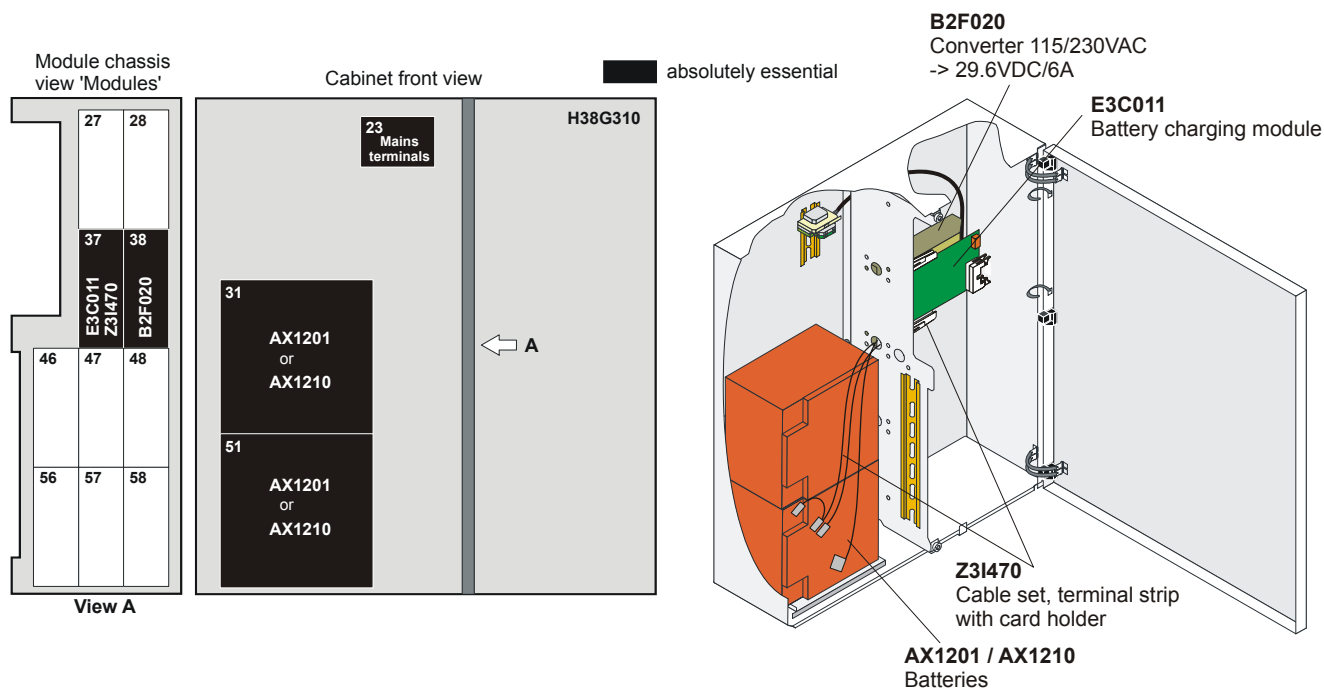


## 10.3 Modules

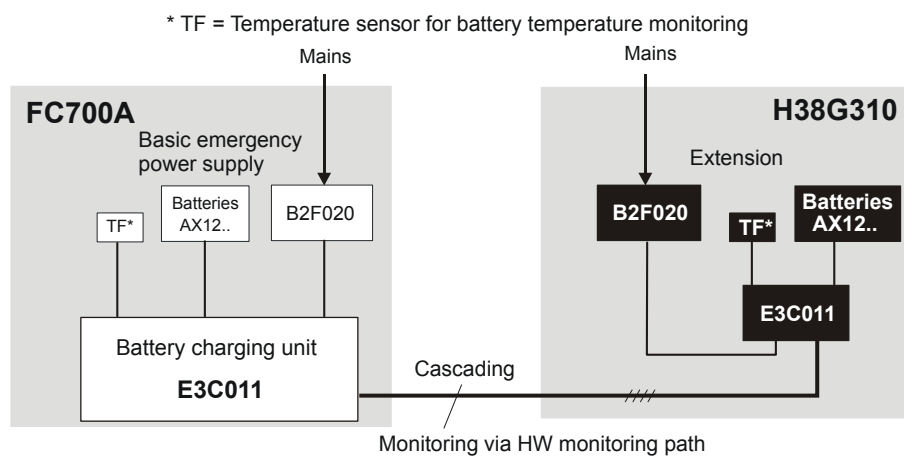
Component	Order-No.	Description	Notes
<b>Control unit</b>			
FC700A-1	A5Q00004734	Control unit pre-assembled	Including B3Q700, H23B010, B2F020, E3C011, Z3I470, E3G070, Z3I380, 2x Z3I1050, 1x Z3I1060 pre-wired
<b>Control terminal, Parallel indicator panel</b>			
B3Q700	A5Q00004719	Control terminal	Details see chapter 12
B3R051	490513	Parallel indicator panel	
<b>LON-Bus devices</b>			
E3I040	499310	LON interface	
K3I050	496766	LON/Mimic Display converter	
K3I110	528854	LON I/O card	Details see chapter 18
B3Q580	496177	Floor repeater panel	
B3Q590	496180	Floor repeater panel with control functions	
B3Q595	534110	Floor repeater panel with control functions	
<b>Line modules</b>			
E3M111	511531	Line module SynoLOOP	Details see chapter 15
E3M080	460268	Line module SynoLINE600/-Ex	
<b>Control modules</b>			
E3G050	460255	Control module 'Contacts'	
E3G060	542539	Control module 'monitored'	
E3G070	546661	Control module 'universal'	Details see chapter 17
E3L020	546645	Control module 'Driver'	
Z3B171	484383	Relay module	
<b>Interfaces</b>			
E3H020	460475	Gateway module	Details see chapter 19
E3I020	460239	RS232 module	Details see chapter 12 and 21
E3L030	475994	Control module VdS	
<b>Power supply</b>			
AX1201	225487	Battery 12V/27Ah	
AX1210	475570	Battery 12V/15Ah	
<b>Accessories</b>			
Z3I1060	A5Q00004722	Terminal block, 2x20 terminals in two levels	For additional modules
Z3I1050	A5Q00004717	Connection cable 19 conductors	For connection via terminal 'X2'
Z1K030	484231	Terminal block with p.c.b. Chassis	To direct connection
Z3I380	475567	Cable set I-Bus long	To connect modules at the bottom with modules at the top

# 11 Auxiliary power supply

## 11.1 Configuration



## 11.2 Block diagram



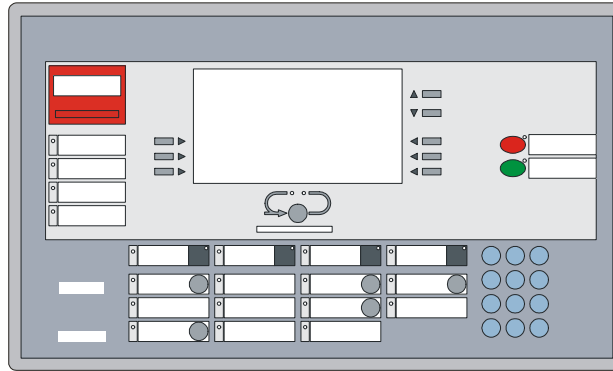
→ Details see document 007831, chapter 'Cascading principle'

To activate the supervision path of the E3C011, the device "Fu supply ext. supply supervision" must be created in the tool SWE700A.

## 11.3 Modules

Component	Order-No.	Description	Notes
H38G310	484930	Housing set	Door without cut-out
B2F020	470588	Converter 115/230VAC -> 29,6VDC 6A	
E3C011	505479	Battery charging unit	
Z3I470	484341	Cable set with card holder	
AX1201	225487	Battery 12V / 27Ah	Capacity based battery make 'ALARMCOM' (FIAMM)
AX1210	475570	Battery 12V / 15Ah	

## 12 Control terminal B3Q700 (FC/FT)

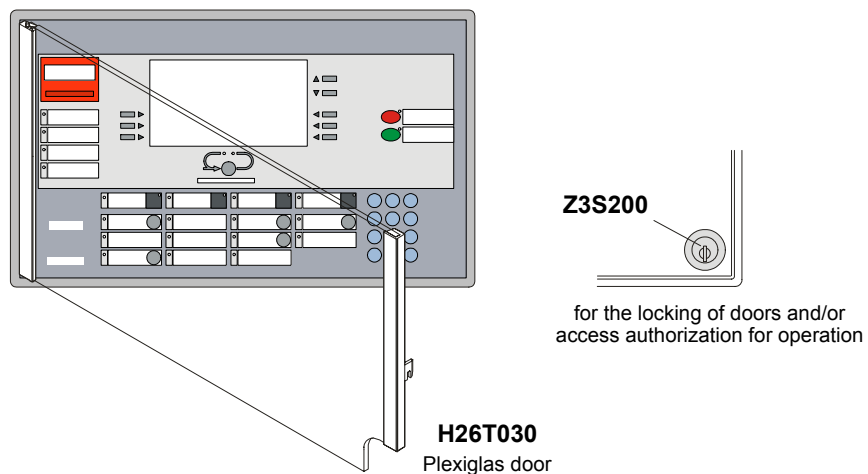


### 12.1 Features

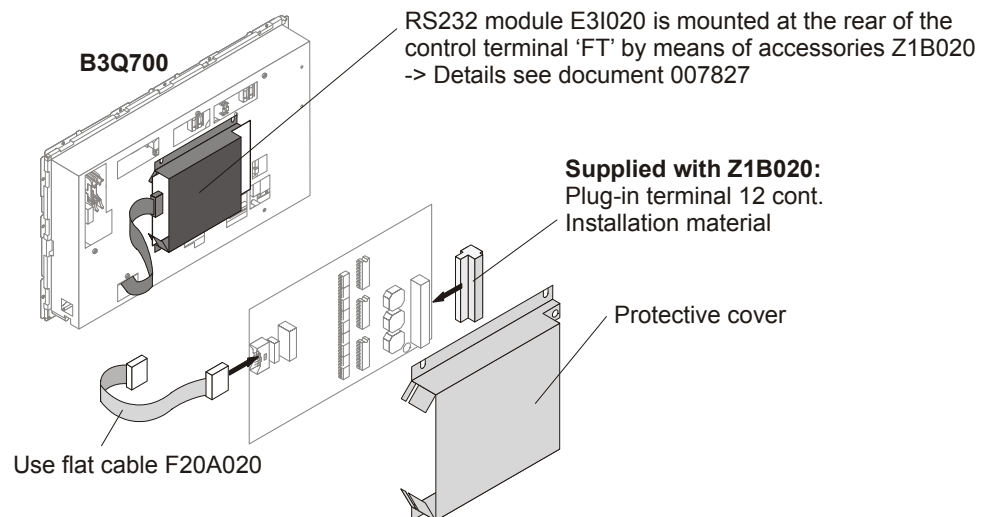
- Double-sized (240x128 dots), backlit LC-Display for most intuitive and user-friendly operation
- Context- and system state adjusted operation functions via soft keys
- Functionally grouped, ergonomically operating and indicating elements
- Detailed event information like event type and location, intervention instruction texts, system operating conditions etc.
- Integrated emergency operation function
- Insertable inscription strips in various languages
- Access to system functions via four different operating levels depending on user profile
- Configurable for single or multi AREA operation
- Access authorisation via password or key switch
- Options
  - Lockable Plexiglas door H26T030
  - RS232 module E3I020
  - LON interface E3I040 for LON devices (floor control terminals etc.)
  - Parallel indicator panel B3R051

### 12.2 Options

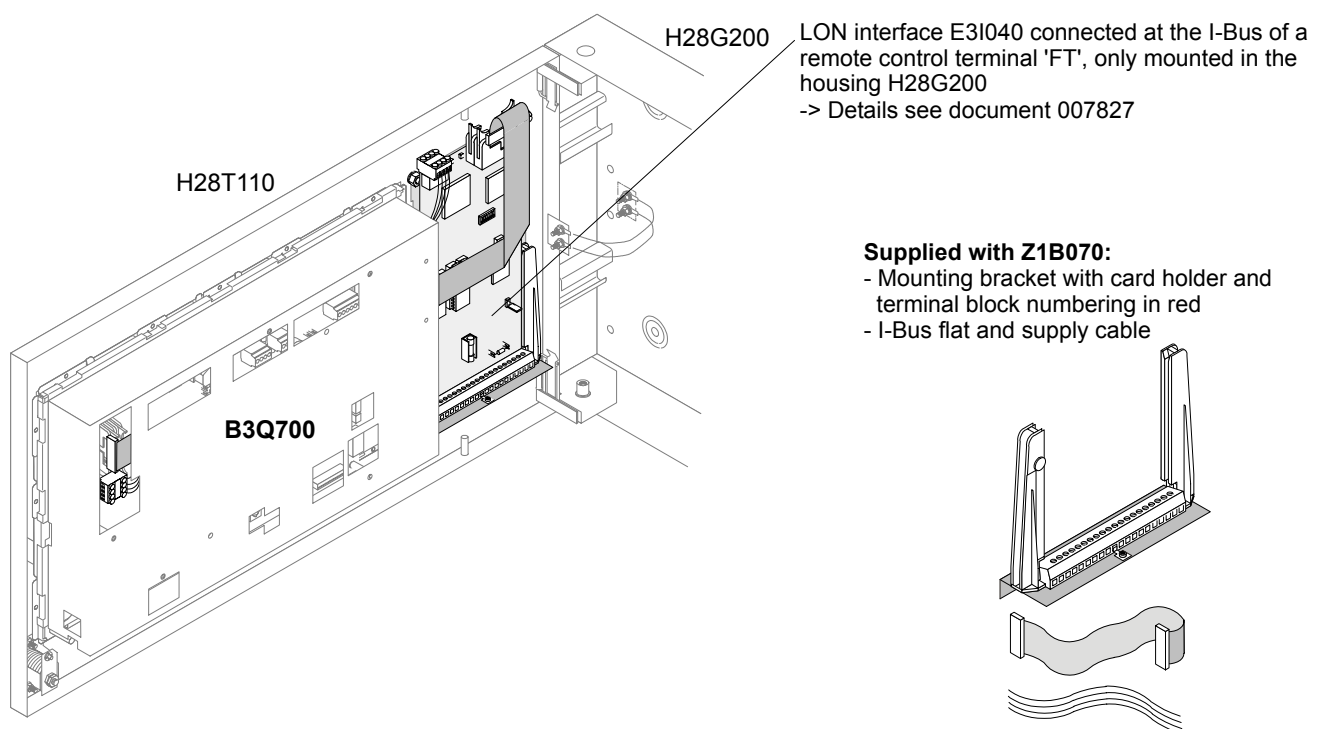
#### 12.2.1 Plexiglas door to B3Q700 (FC/FT)



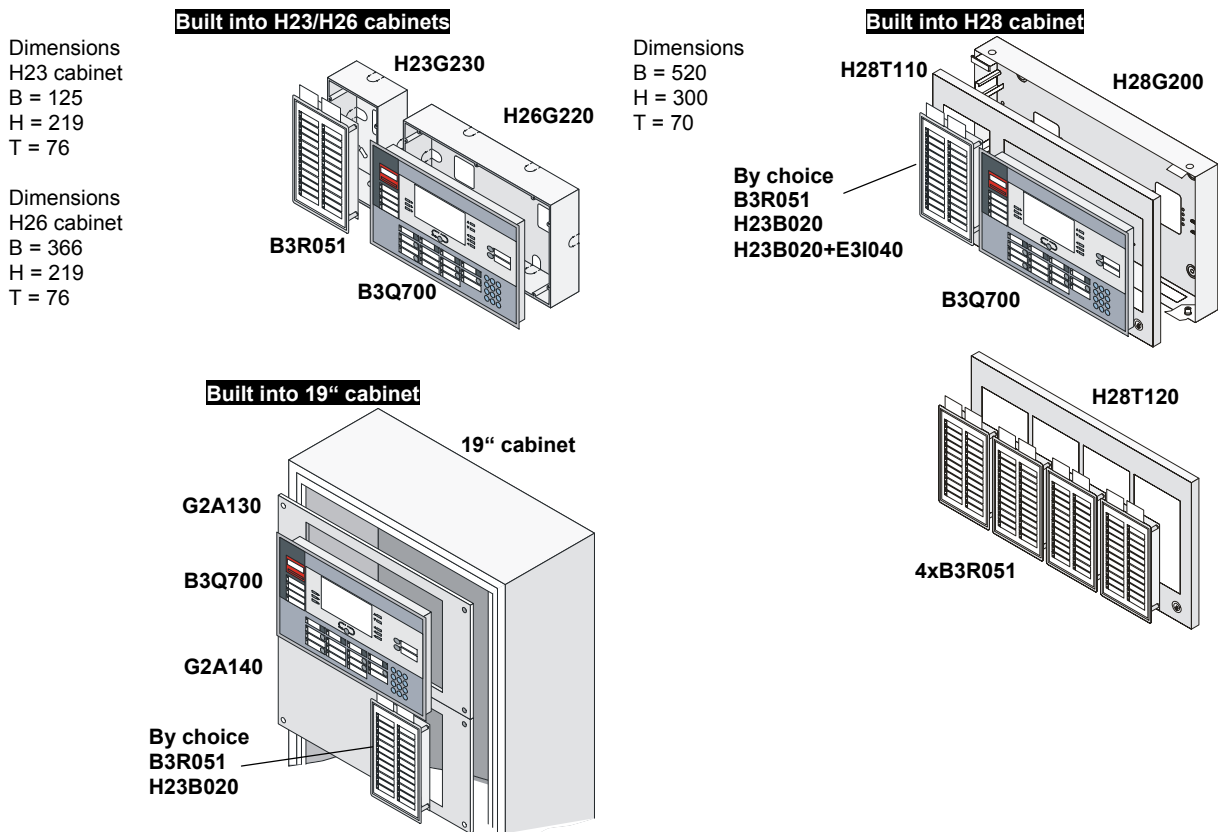
## 12.2.2 Place of the E3I020 RS232 module (FT)



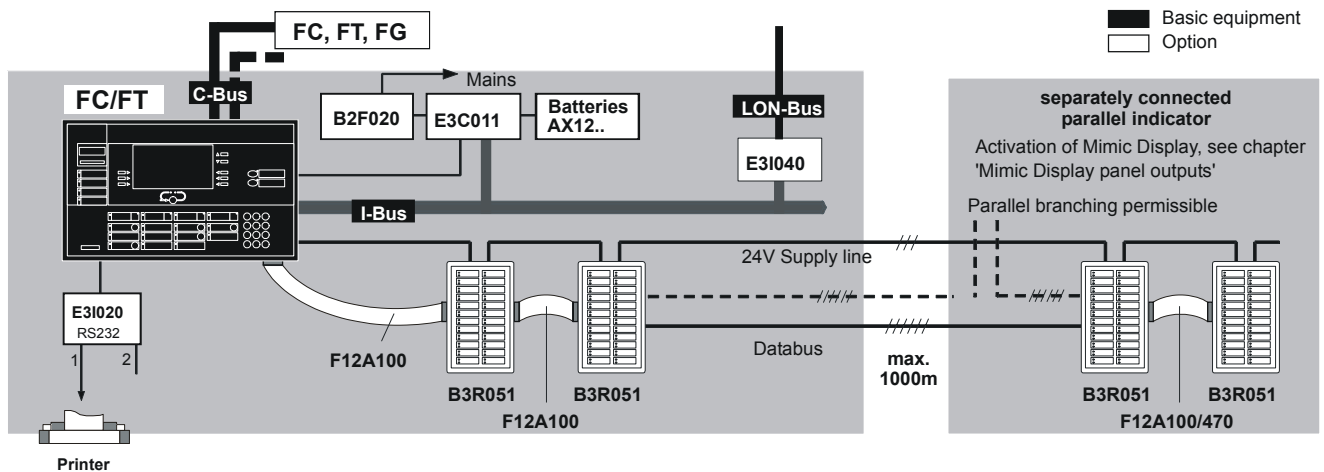
## 12.2.3 Place of the E3I040 LON interface (FT)



## 12.3 Installation possibilities (FT)

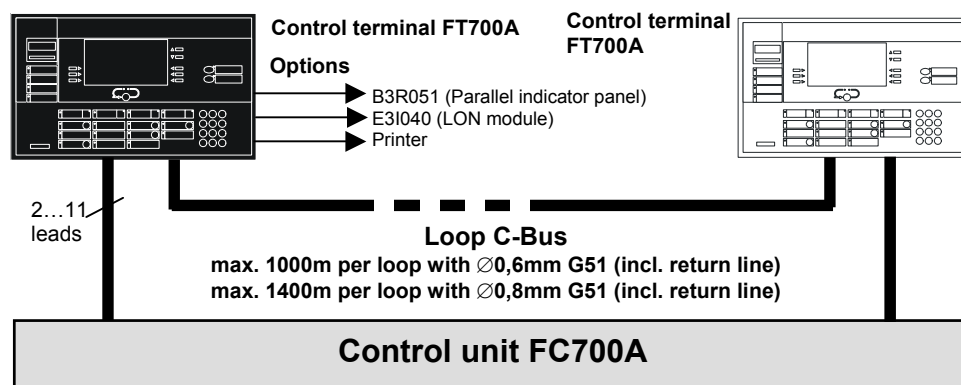


## 12.4 Block diagram



- B3R051
  - Can be installed separately, however at max. 1000m
  - Max. 24 units, however max. 8 addresses
  - Free allocation of the LEDs (programming according to application)
  - Line and equipment not monitored

## 12.5 Connection lines between control unit and external operating units



When planning a system the following condition must be complied with:

At least **one** operating unit must comply with standard EN54, i.e. it must be equipped with emergency operation and emergency power supply.

### EN54 requirements:

- Communication as loop line -> design C-Bus as a loop line
- Operating units also with emergency operation -> 3 additional wires
- Second de-coupled 24V supply -> 3 additional wires or autonomous power supply

The number of wires in the connection cable depends on the application and the distances between the stations:

Application	C-Bus	24V supply	Emergency power supply	Emergency operation circuit	Number of wires
24V supply from control unit <b>EN54 complied with</b>	✓ (2 wires)	✓ (3 wires)	✓ (3 wires)	✓ (3 wires)	11
24V supply from control unit without emergency operation and emergency power supply	✓ (2 wires)	✓ (3 wires)			5

Note:

- Emergency operation circuit required including between CPUs or for a separately connected Gateway
- Emergency operation circuit and emergency supply are not designed as a loop line
- Emergency supply via separate cable or C-Bus feedback

## 12.6 Power supply (24V)

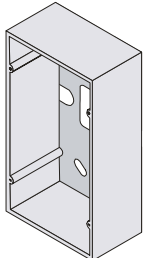
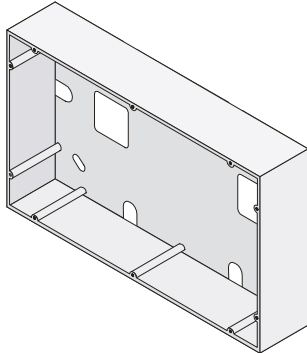
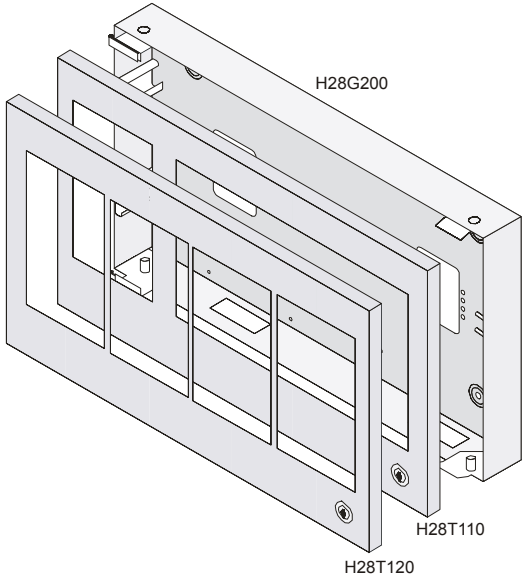
- Operating unit B3Q700 is designed for the voltage range 18...45VDC
- The maximum current at 24V is 400mA
- Max. Length of line (approximate):
  - For cables Ø 0.8mm -> 180m
  - For cable cross-section 1mm<sup>2</sup> -> 360m
- The current consumption for the options (parallel indicator panel, LON-module) must be taken into account separately

## 12.7 Modules

Component	Order-No.	Description	Notes
B3Q700	A5Q00004719	Control terminal FT700A	Operating unit
CTY00760	(OSS)	Flash program file	For control terminal
CIY00760	(OSS)	Flash program file	For control unit
FCA725	A5Q00004833	Inscription set 'Spanish'	
FCA775	A5Q00004834	Inscription set 'Italian'	
FCA785	A5Q00004835	Inscription set 'polish'	
H26T030	570530	Plexiglas door	Incl. mounting accessories
Z3S200	570349	Key switch module (KABA)	For operating access
B3R051	490513	Parallel indicator panel '2x24 LEDs'	
E3I020	460239	RS232 module	For the connection of a printer -> see chapter 21
Z1B020	475907	Mounting accessories for E3I020	Essential when mounting E3I020 on the rear terminal of B3Q700 (FT)
F20A020	476317	Flat cable micro 20 conductors 0.165m	Link between E3I020 -> B3Q700, if E3I020 on the rear of B3Q700 (FT)
E3I040	499310	LON interface	Converter between I-Bus and LON-Bus
Z1B070	A5Q00001720	Mounting accessory for E3I040	Essential when mounting E3I040 in housing H28G200
Z3I481	491185	Cable set for control terminal FT700A in H28G200	Comprising -> Terminal block with made-to measure cable, cleat and cable clips -> Details see document 007827

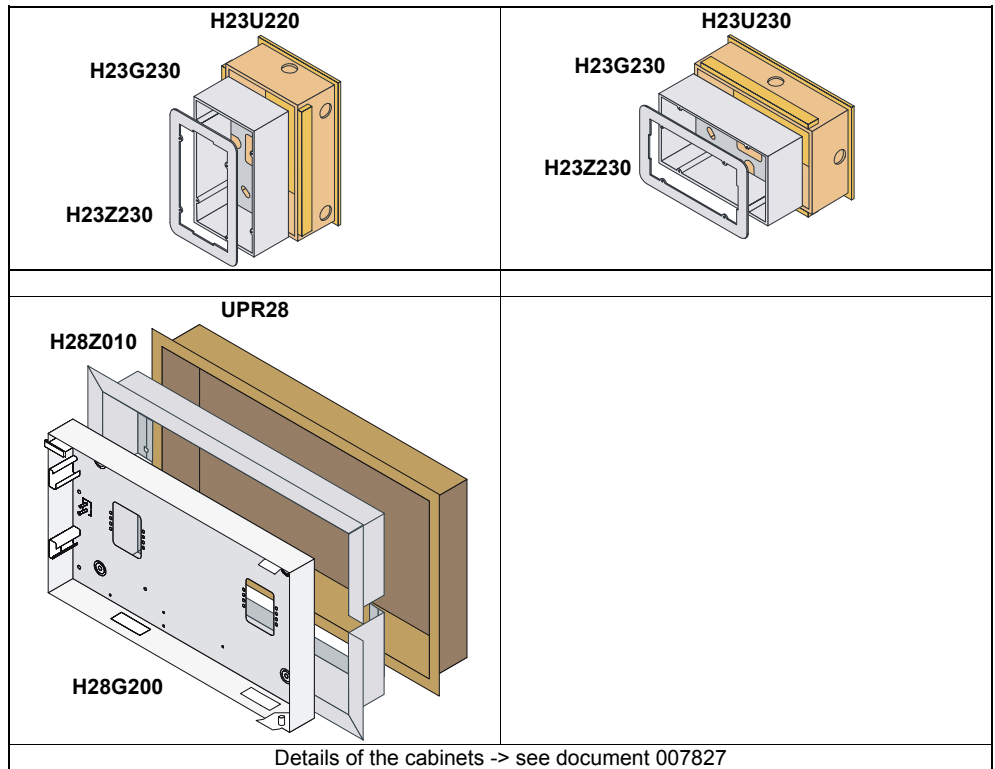
Cabinets H23/H26/H28 for details referring cabinets -> see chapter 13

# 13 Range of cabinets H23 / H26 / H28

<p><b>H23G230</b>  Dimensions 125x219x76mm  Material Plastic  Colour Pantone 421 grey  Protection category IP40</p>  <p>Front can not be pivoted</p>	<p><b>H26G220</b>  Dimensions 366x219x76mm  Material Plastic  Colour Pantone 421 grey  Protection category IP40</p>  <p>Front can not be pivoted</p>	<p><b>H28G200</b>  Housing with lock (DOM)  Dimensions 520x300x70mm  Material Steel sheet  Colour housing RAL7035 light grey  Protection category IP30</p>  <p><b>H28T110</b>  Door with cut-out for control terminal and parallel indicator panel B3R051 or cover plate H23B020  Colour door RAL7035 dark grey  Protection category IP30</p> <p><b>H28T120</b>  Door with cut-out for 4 parallel indicator panel B3R051  Colour door RAL7035 dark grey  Protection category IP30</p> <p>Doors are hinged at left!</p>
<p>Details of the cabinets -&gt; see document 007827</p>		



## 13.1 Recessed mounting H23G230 and H28G200

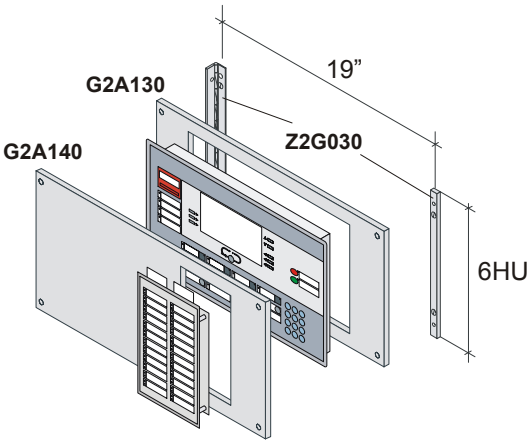


## 13.2 Modules

Component	Order-No.	Description	Notes
H23G230	475091	Plastic cabinet	For additional indicators and operating units
H26G220	462800	Plastic cabinet	For remote control terminal B3Q700 (FT)
H28G200	409944	Cabinet (without door)	For various applications
H28T110	474982	Cabinet door for B3Q700 (FT) / B3R051	
H28T120	474995	Cabinet door for 4 B3R051 Parallel indicator panel	
H23B020	476278	Cover plate	For H28T110/120
H28Z010	410593	UP frame set	For recessed mounting of cabinet H28G200
H23U220	379126	Recess box to B3R051	For recessed mounting of cabinet H23G230
H23U230	532879	Recess box to B3Q580/590/595	For recessed mounting of cabinet H23G230
H23Z230	532882	Cover frame to B3Q580/590/595/B3R051	For recessed mounting of cabinet H23G230
UPR28	430434	Recess box	For 1 H28G200 cabinet (poss. required)

# 14 19" accessories

→ Application of 3rd party cabinets



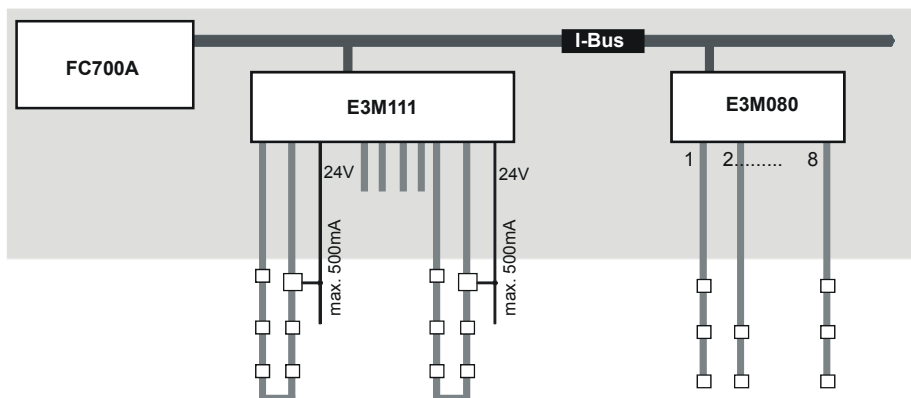
## 14.1 Modules

Component	Order-No.	Description	Notes
Z2G030	378198	Hinge 19"/6HE	Consisting of hinge and spacer profile
G2A130	475088	Adapter plate 19"/6HE	For control terminal B3Q700 (FT)
G2A140	484228	Adapter plate 19"/6HE	For parallel indicator panel B3R051

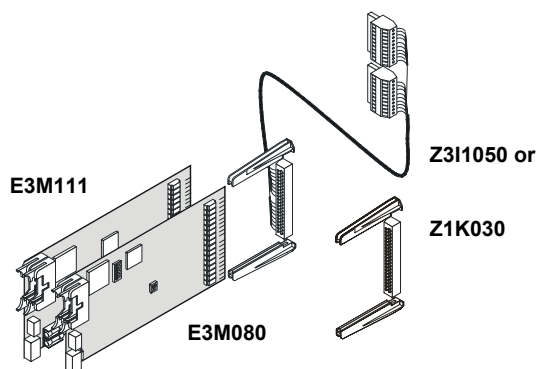
# 15 Line modules

## 15.1 Overview

- E3M111 for addressable detectors SynoLOOP
- E3M080 for collective detectors SynoLINE600/-Ex



Detector system	SynoLOOP	SynoLINE600/-Ex
Number of lines	4	8
Number of addresses	4 x 128	8
Loop line	✓	-
Stub line	✓	✓
Short-circuit separator	In each device	-
Special features	Separate supply output 24V for input/output modules	Line short circuit can be evaluated as a fault or as an alarm

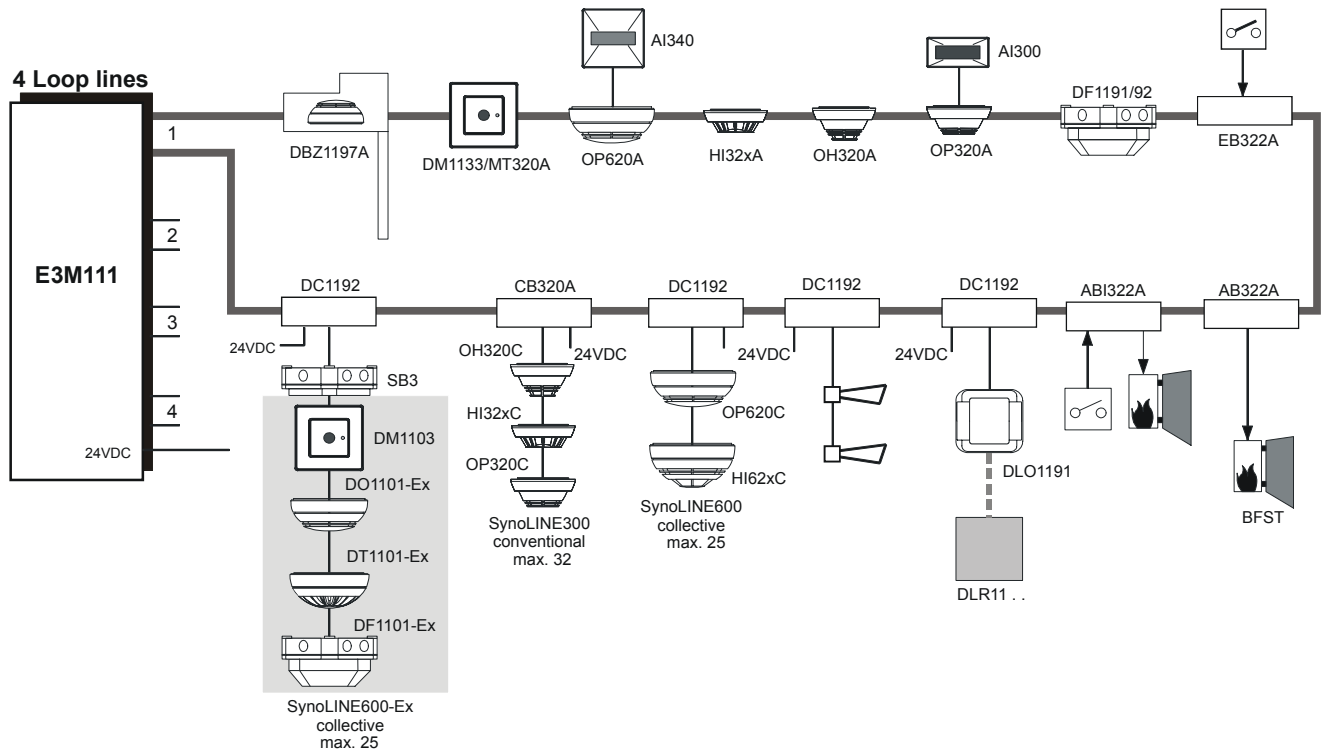


## 15.2 Modules

Component	Order-No.	Description	Notes
E3M111	511531	Line module SynoLOOP	Addressable
E3M080	460268	Line module SynoLINE600/-Ex	Collective
Z3I1050	A5Q00004717	Connection cable 19 conductors	For connection via terminal block 'X2'
Z1K030	484231	Terminal block with p.c.b. Chassis	For direct connection

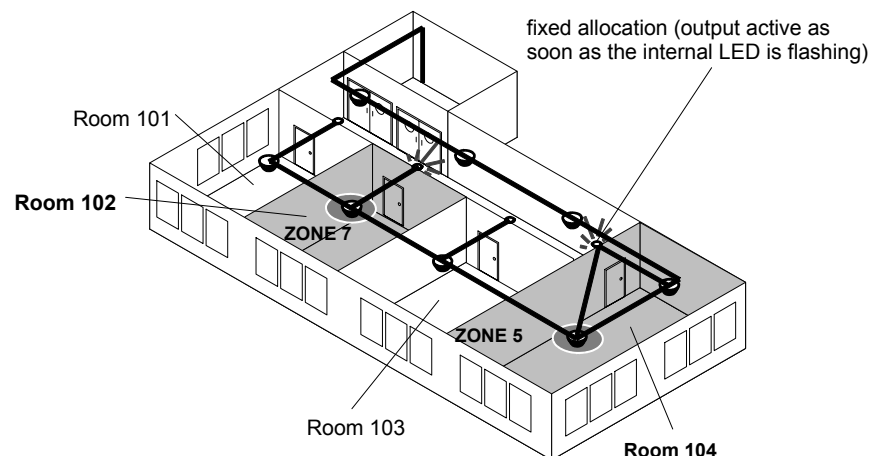
## 15.3 Detection line "addressable" SynoLOOP

- Number of addresses per line max. 128 with APMK1
- All detectors, manual call points and input/output modules with integrated line separator
- Connectable types of detectors and connection see document 007831



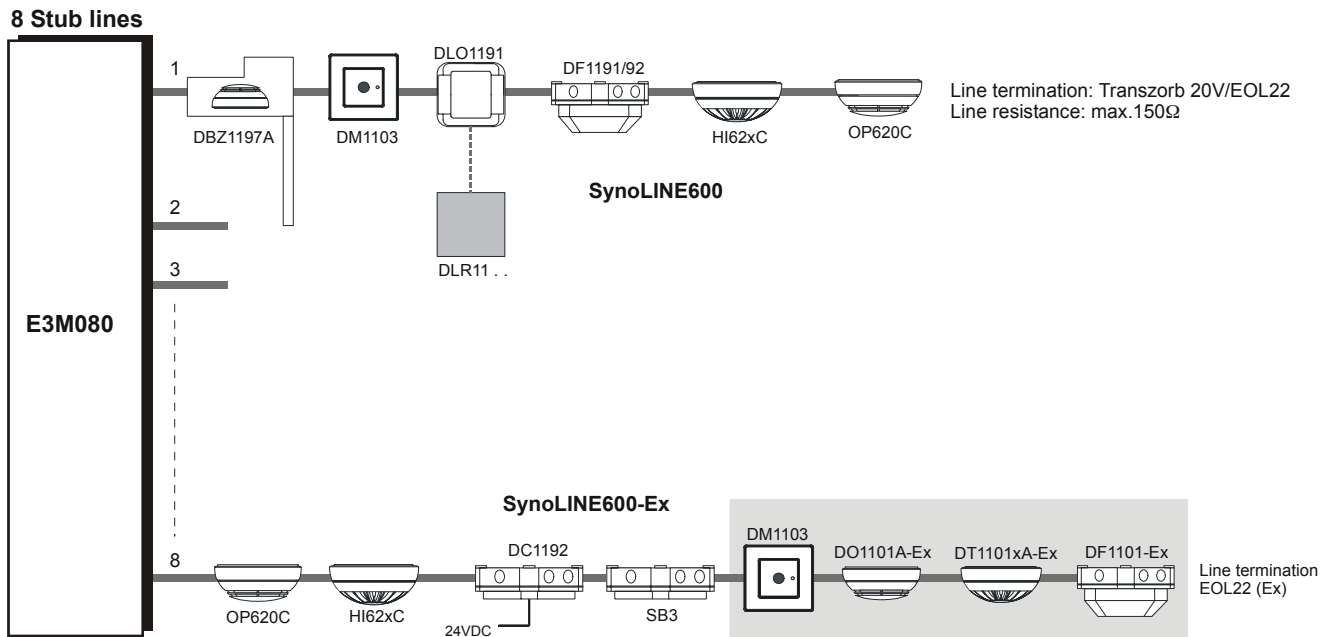
→ Some detectors have different loading factors, to evaluate how many special detectors can be connected to one addressable line see chapter 16.3

Control output for 1 external response indicator in each detector base



## 15.4 Detection line "collective" SynoLINE600/-Ex

- All detectors on a line have the same collective address (ZONE)
- Number of detectors per line max. 25 with KMK1
- Line termination depending on application by means of Transzorb or EOL22 (Ex)
- Connectable types of detectors and connection see document 007831



- Some detectors have different loading factors, to evaluate how many special detectors can be connected to one collective line see chapter 16.2.

# 16 Connection factors, line resistances and capacitances

## 16.1 Terminology and abbreviations

<b>KLK</b>	Collective line factor (SynoLINE600)
<b>KMK</b>	Load factor for collective / conventional elements (SynoLINE600/300)
<b>APLK</b>	addressable line factor (SynoLOOP)
<b>APMK</b>	Load factor for addressable elements (SynoLOOP)

## 16.2 Collective detection line

- The modules E3M080 / DC1192 have the collective line factor KLK 25
  - Line resistance max. 250Ω, 150Ω depending on evaluation required (line type 1, 11)
  - Line capacitance max. 4μF  
The entire line from the control unit to the last detector as well as all response indicator lines must be included when working out capacitance.
- Details see document 007831

**The total amount of detectors connected to one collective line should not exceed a loading factor of 25**

Element	Short designation	Load factor KMK
Smoke detector	OP620C/OP320C	1
Heat detector	HI620C/622C/HI320C/322C	1
Multisensor smoke detector	OH320C	1
Smoke detector	DO1101-Ex	1,6
Heat detector	DT1101-Ex	1
Infrared flame detector	DF1101-Ex	6
Infrared flame detector	DF1191/92	6
Linear smoke detector	DLO1191	25
Manual call point	DM1101, DM1103	1
In-/output module	DC1192	1

## 16.3 Addressable detection line

- The line module E3M111 has the addressable line factor APLK 128
  - Line resistance see chapter 16.4
  - Line capacitance see chapter 16.4
- For a description of the E3M111 line module, see document 007831 'Hardware description'.

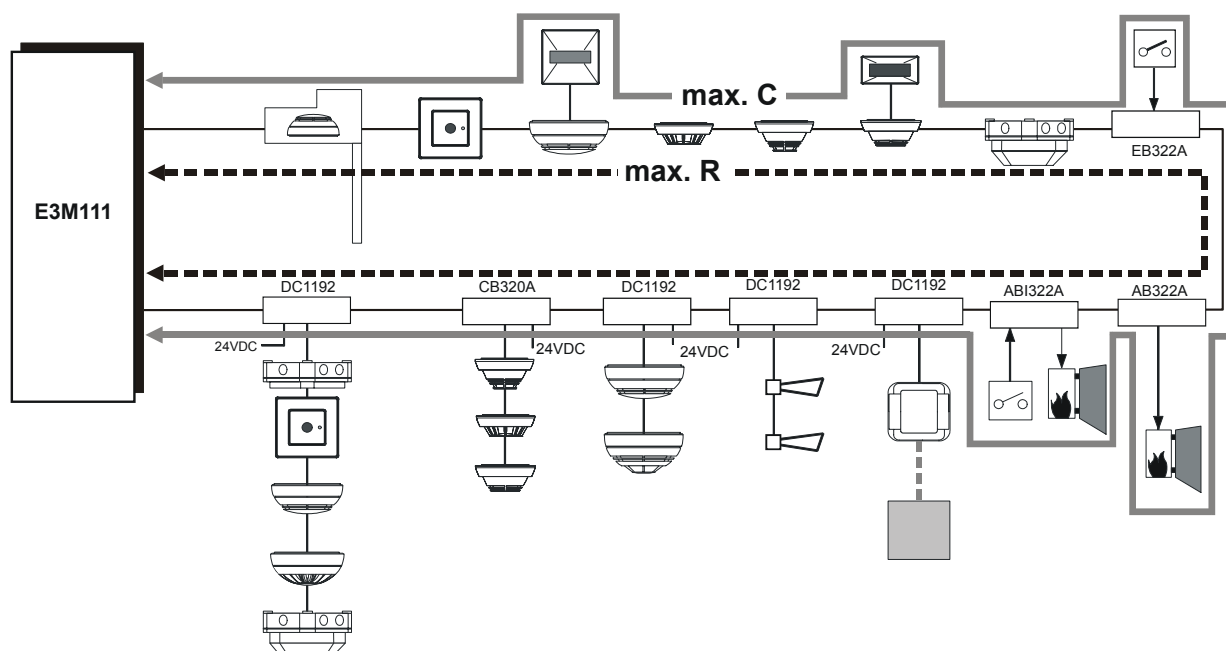
**The total amount of detectors connected to one addressable line should not exceed a loading factor of 128**

Element	Short designation	Load factor APMK
Smoke detector	OP620A, OP320A	1
Heat detector	HI620A/622A, HI320A/322A	1
Multisensor smoke detector	OH620A, OH320A	1
Infrared flame detector	DF1191/92	5
Manual call point	MT320A, DM1133	1
Input module	EB322A	1
Output module	AB322A	2
In-/output module	ABI322A	2
In-/output module	DC1192, CB320A	3

Do not install lines longer than 2000m

## 16.4 Line resistance and capacitance

- The max. line resistance of the entire detector loop respectively from the detector furthest away to each of the two control unit connections must not exceed  $150\Omega$ .
- The entire line from the control unit to the equipment connected and back again to the control unit as well as response indicator lines must be included when working out capacitance.



Max. Resistance **150 $\Omega$**  (max. R)

Max. Capacitance **300nF** (max. C) -> max. 600nF with max. 50 $\Omega$  line resistance

# 17 Control modules

## 17.1 Application of control modules

- Activation of fire control installations (shutting-down ventilation, closing fire dampers etc.)
- Activation and monitoring of alarm device
- Activation and monitoring of remote transmission equipment
- Activation of Mimic Display panels

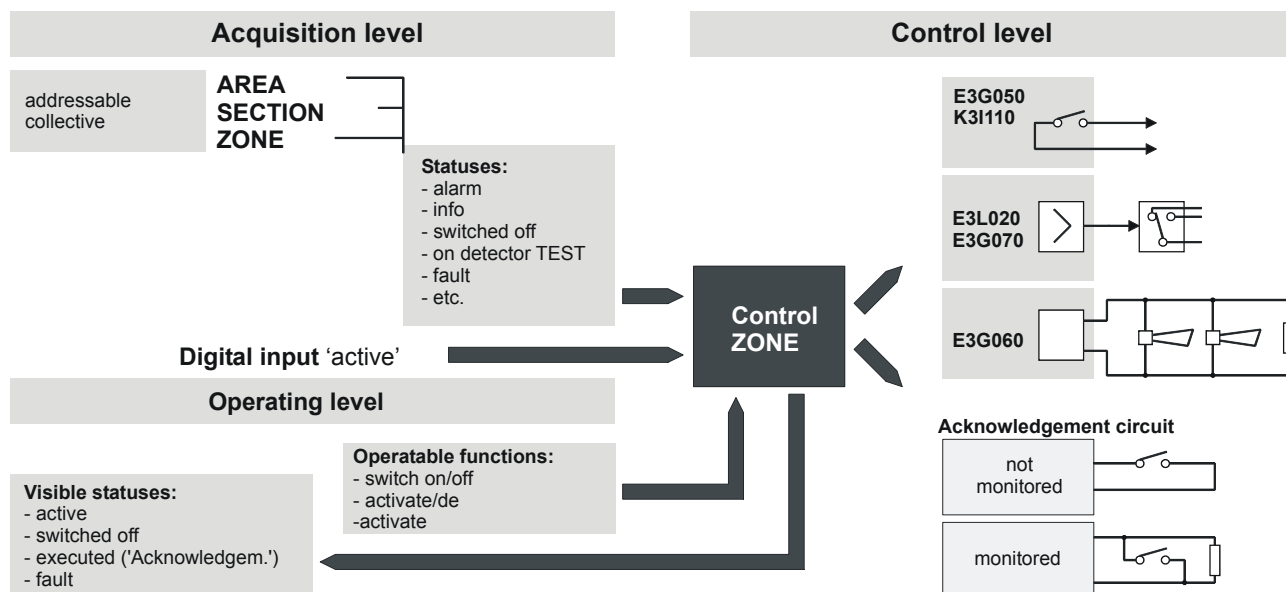
### 17.1.1 Overview of the available modules with control outputs

Modules	Monitored control lines For alarm devices	Driver outputs Programmable	Contact outputs (Volt free) Programmable	Remote transmission interface To remote transmission equipment
E3G070	2	7 1) 2)		✓
E3L020		16 1)		
E3G050			8	
E3G060	6 5)			
K3R072		48 3)		
K3G060			24 NO contact 4)	
K3I110			16 NO contact 5)6)	

- 1 Can also be used as control inputs (e.g. 'acknowledgement')
- 2 These inputs/outputs also serve for the activation of the remote transmission equipment
- 3 For activation of Mimic Display panel, connected to the operating terminal B3Q700 or K3I050 (no I-Bus module) -> Details see chapter 17.7
- 4 Applicable only with K3R072 -> Details see chapter 17.9
- 5 Programmable
- 6 LON-Bus module -> Details see chapter 18.5

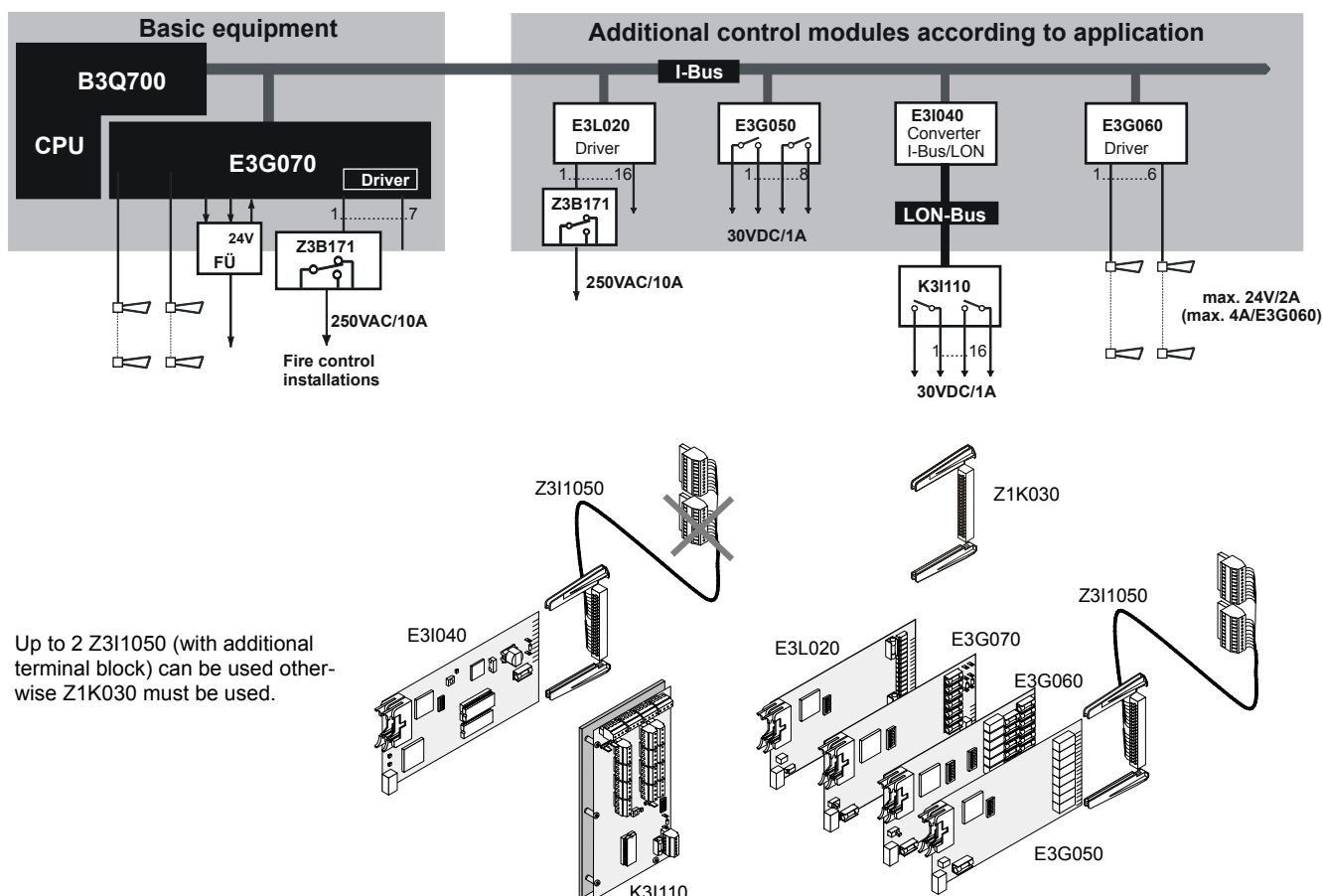
## 17.2 Means of linking

- Any statuses of entry nodes can be linked to control ZONES
- Normally, only 1 control ELEMENT is contained in 1 control ZONE (= control output)
- A user text is allocated to each control ZONE

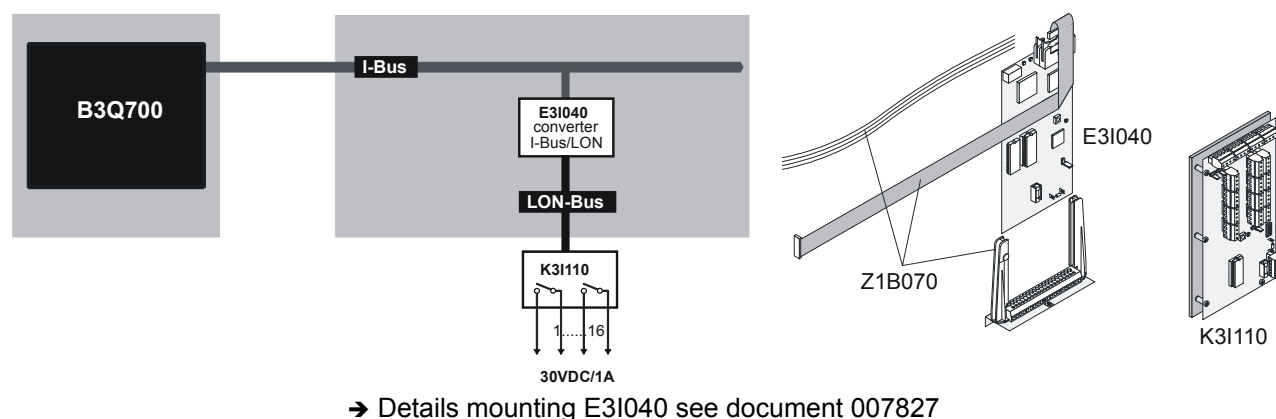




## 17.3 Control outputs station type FC700A



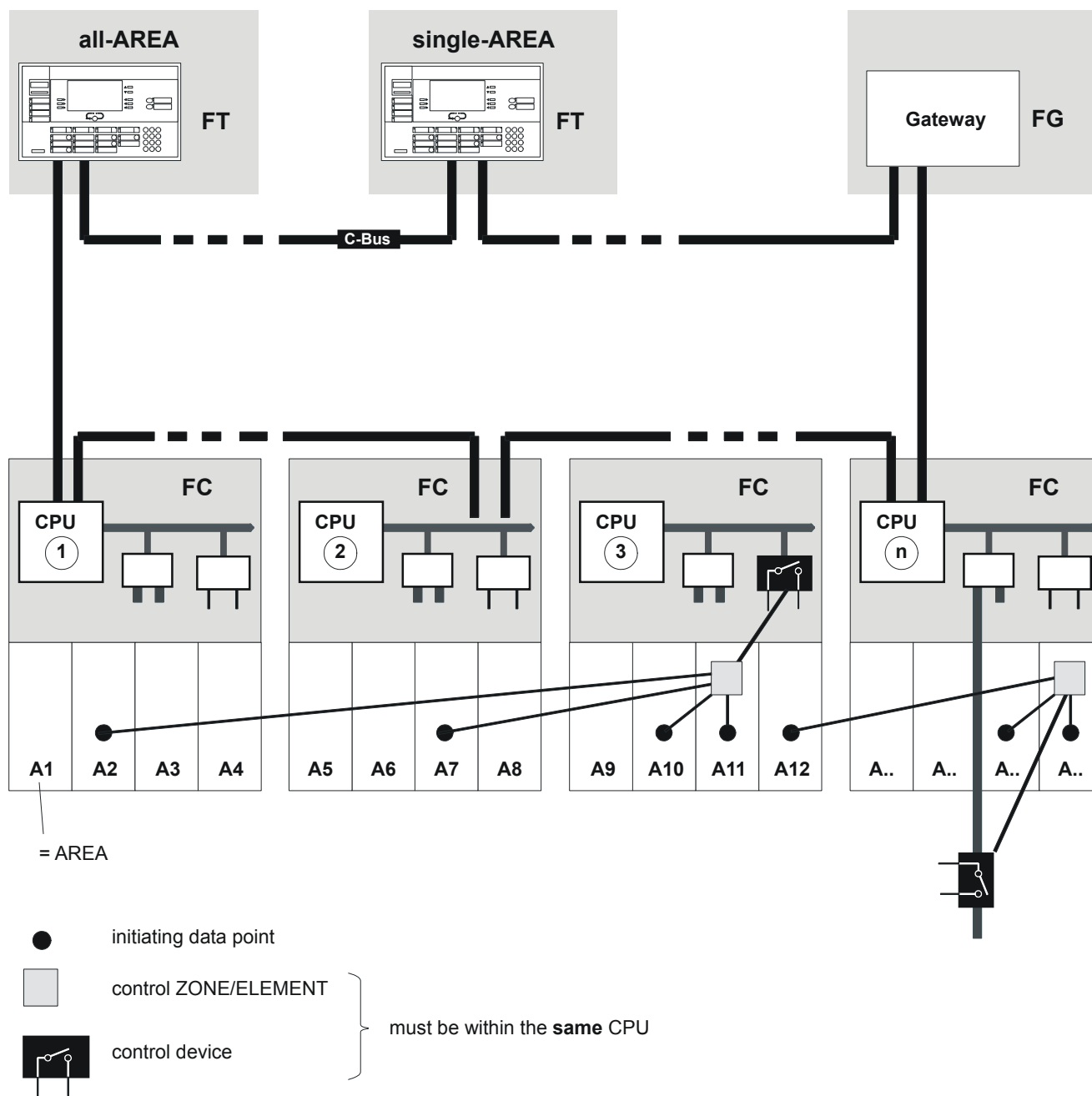
## 17.4 Control outputs remote station type FT700A



## 17.5 Modules

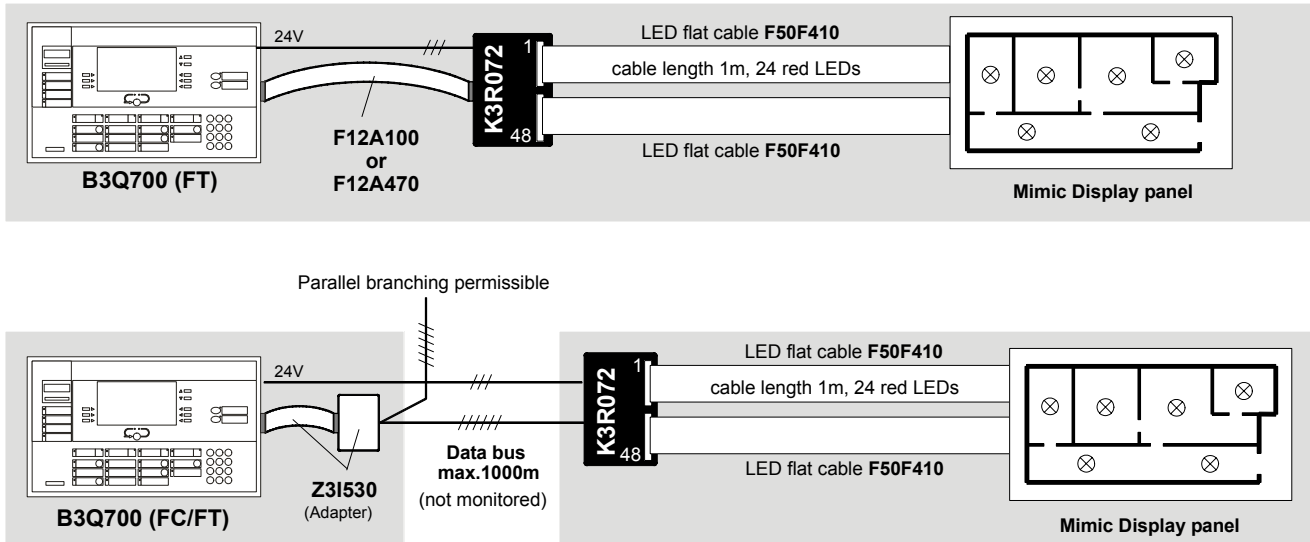
Component	Order-No.	Description	Notes
E3G070	546661	Control module 'Universal'	Included in FC700A-1 package
E3L020	546645	Control module 'Driver'	16 control inputs or outputs
E3G050	460255	Control module 'Contacts'	8 control output contacts
E3G060	542539	Control module 'Monitored'	6 monitored control lines for alarm equipment
K3I110	528812	LON-I/O card	16 programmable in-/outputs
Z3B171	484383	Relay module 1x 250VAC/10A	To switch from external voltage
E3I040	499310	LON module	Converter between I-Bus and LON-Bus
Z1B070	A5Q00001720	Mounting accessory for E3I040	Essential for mounting E3I040 in housing H28G200
Z3I1050	A5Q00004717	Connection cable 19 conductors	1 of each per E3L020/E3G050/60
Z1K030	484231	Terminal block with p.c.b. Chassis	For direct connection

## 17.6 CPU-overlapping controls



**Limitation:** see chapter 8

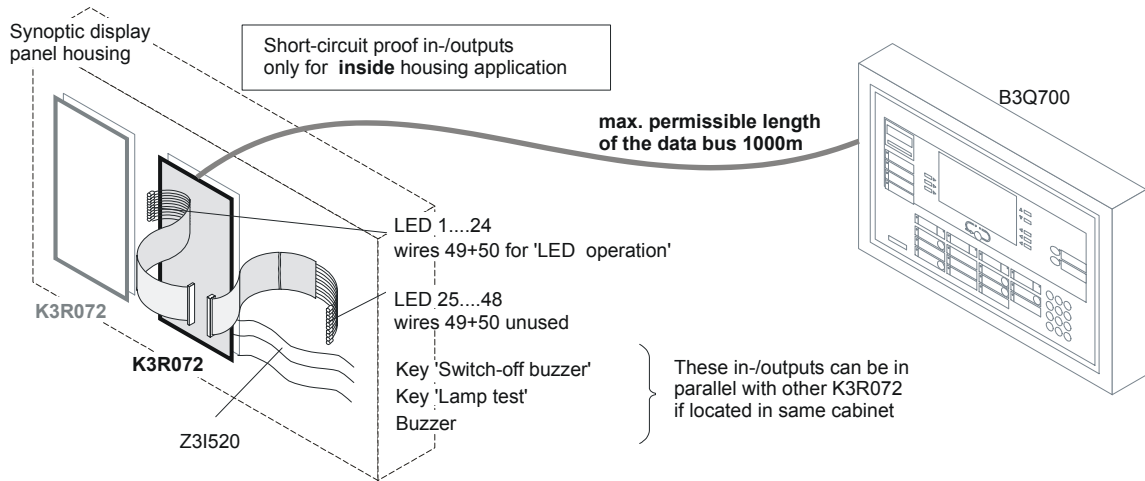
# 17.7 Mimic Display panel outputs



→ Details see document 007831

## K3R072:

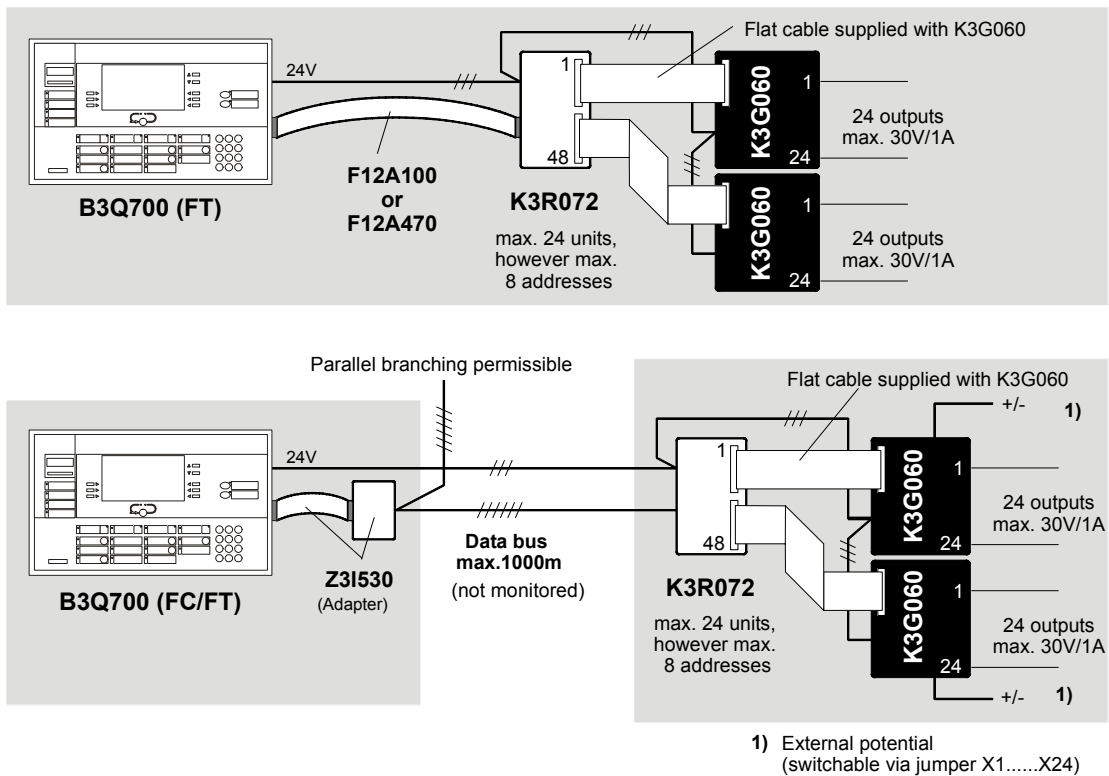
- Short circuit-protected outputs
- Output for local buzzer and LED operation
- Inputs for button 'buzzer switch-off' und 'lamp test'
- Only suitable for the activation of LEDs
- Outputs can only be allocated the statuses from **one** logical node
- Max. 24 devices however max. 8 addresses



# 17.8 Modules

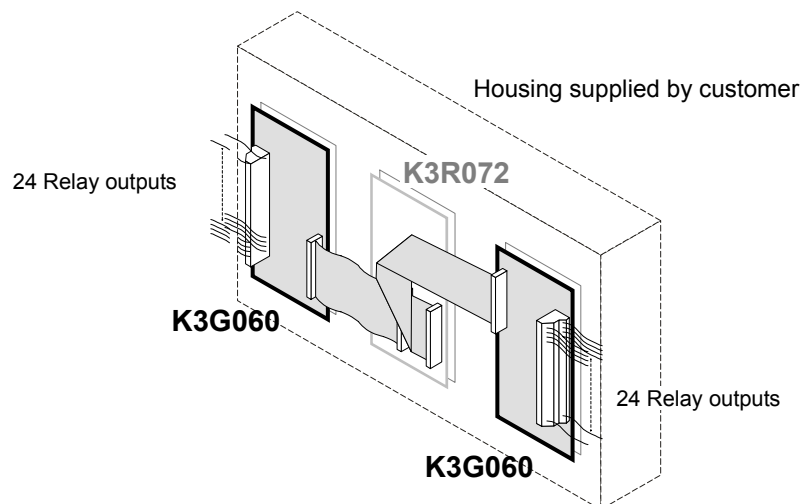
Component	Order-No.	Description	Notes
K3R072	528605	Mimic Display activation	Comprises 12 cables (2-wire with connector, length=0.5m) 50-wire, 24 red LEDs, cable length 1m To adapt flat cable to terminals From B3Q700 (FT) to K3R072/B3R051 From B3Q700 (FT) to K3R072/B3R051
Z3I520	484969	Cable set for K3R072	
F50F410	529141	LED flat cable for K3R072	
Z3I530	484972	Adapter	
F12A100	495275	Flat cable Micro 12-pin, 0.4m	
F12A470	495288	Flat cable Micro 12-pin, 1.5m	

## 17.9 Relay outputs



### K3G060:

- 2 K3G060 can be connected to each K3R072
- 24 volt-free relay-make contact
- Contacts not monitored
- Contacts can be individually connected via jumper to externally supplied V+ or V- potential



## 17.10 Modules

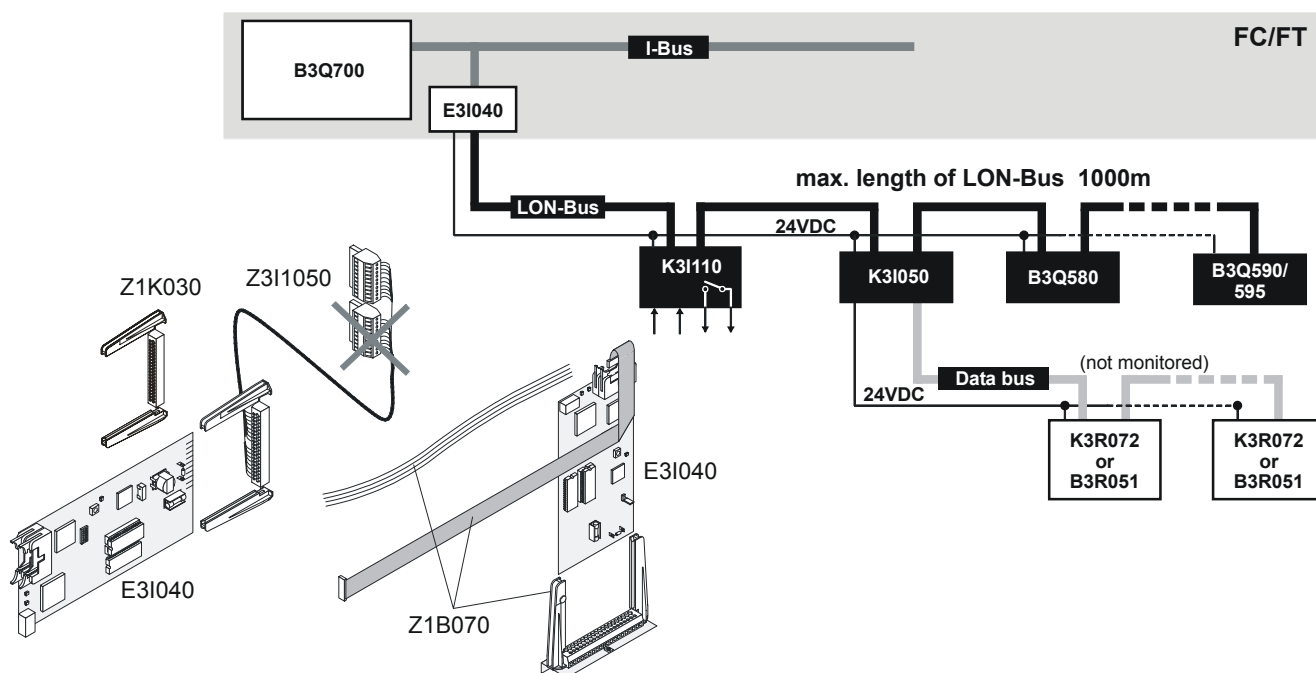
Component	Order-No.	Description	Notes
K3G060	528786	Relay card incl. flat cable	Option to K3R072
Z3I530	484972	Adapter	To adapt flat cable to terminals

# 18 LON-Bus devices

## 18.1 Features

- Activation via local communication Bus 'LON'
- 4 different types of device available
  - **B3Q580** = Text display terminal
  - **B3Q590/595** = Text control terminal
  - **K3I050** = LON/Mimic Display converter
  - **K3I110** = LON I/O card
- Connection via I-Bus/LON module E3I040 (converter between I-Bus and LON-Bus)
- The function 'LON-Bus' is possible once per station type 'FC' and 'FT'
- Max. 32 devices per LON-Bus (device type can be mixed as required)
- Monitored two-wire-Bus without loop line function
- All devices require a separate feed line from E3I040
- Wiring of the LON-Bus
  - As '**stub line**' up to 1000m (without T-branches)
  - As '**free topology**' up to 500m (length of line to all devices added) with 'MICC' as 'stub line'.... 700m / as 'free topology'... 300m
  - With special cable (Belden 85102 or 8471) and as 'stub line' up to 2700m
  - Only possible via twisted line (10 turns per meter)
- CPU-overlapping functions **possible**
- B3Q59x: bottom three LEDs are pluggable. Allows application with different LED colour

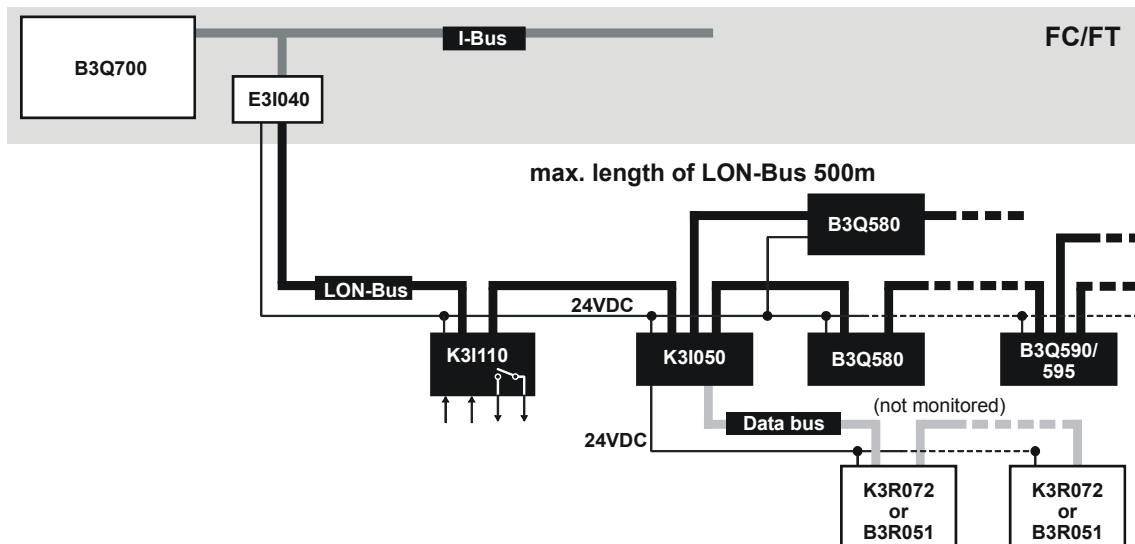
## 18.2 LON-Bus as stub line



→ Details K3R072 see page 43

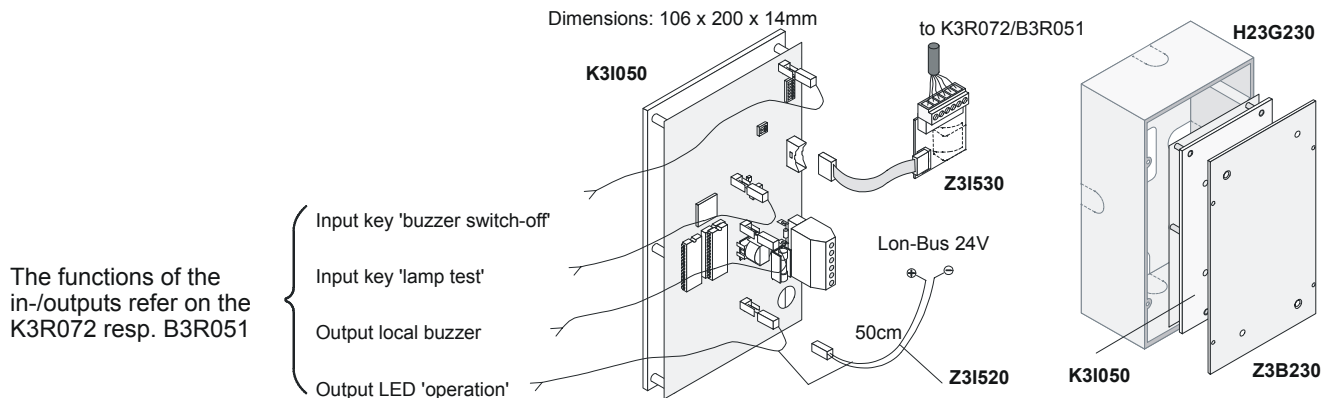
→ Details B3R051 see page 29

## 18.3 LON-Bus as free topology



## 18.4 LON/Mimic Display p.c.b K3I050

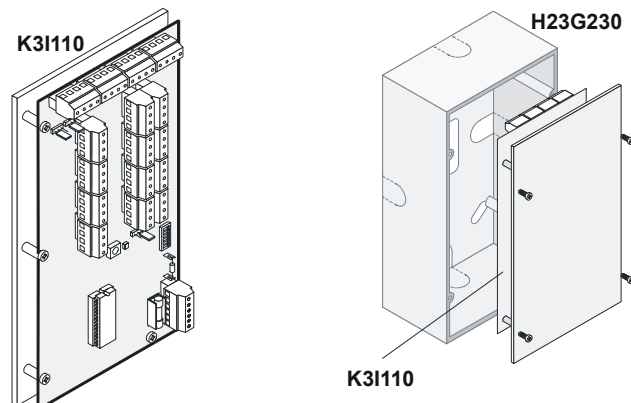
- Allows connection of Mimic Display p.c.b. K3R072 or parallel indicator panels B3R051 (max.24 units, however max. 8 addresses)
- Various local inputs/outputs



## 18.5 LON I/O card K3I110

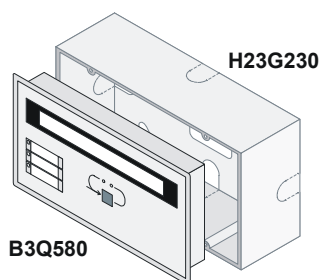
- Input/output card
  - 16 programmable monitored control inputs
  - 16 programmable control outputs

Dimensions: 122 x 220 x 14mm

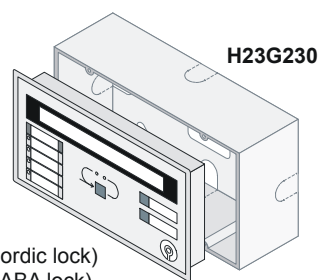


## 18.6 Indicator devices B3Q580 and B3Q590/595

- Both devices have identical dimensions
- Recessed mounting see page 33



B3Q580



B3Q590 (Nordic lock)  
B3Q595 (KABA lock)

Function	B3Q580 Text display terminal	B3Q590/595 Text control terminal
LCD 2x40 characters backlight yellow	✓	✓
Alarm event indicator	All ZONES from 1...4 selectable SECTIONS	All ZONES per station (not selectable)
Fault event indicator	Selectable (yes/no via SWE700A)	Selectable (yes/no via SWE700A)
Selectable operating mode	14 (selectable via SWE700A)	14 (selectable via SWE700A)
Buzzer, can be silenced	✓	✓
3 programmable LEDs	—	✓
Function key 'Onward switching'	✓ (also serves to silence buzzer + lamp test)	✓ (also serves to silence buzzer + lamp test)
Function key 'Acknowledge' / 'Reset'	—	✓
Key switch for operating access	—	B3Q590 = Nordic B3Q595 = KABA
For installation in housing H23G230	✓	✓
Slide-in inscription strips	✓	✓
Operating voltage	9...45V <sub>DC</sub>	9...45V <sub>DC</sub>
Current consumption at 24V	Quiescent: 20mA / max: 180mA	Quiescent: 18mA / max: 185mA

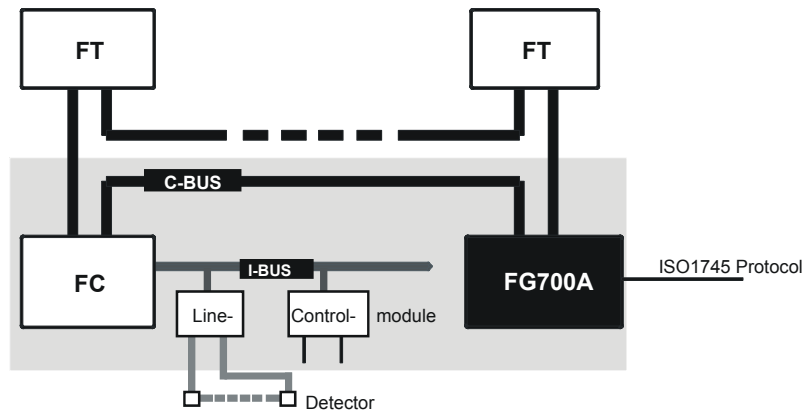
## 18.7 Modules

Component	Order-No.	Description	Notes
E3I040	499310	LON module	Converter between I-Bus and LON-Bus
Z3I1050	A5Q00004717	Connection cable 19 conductors	For connection via terminal block 'X2'
Z1K030	484231	Terminal block with p.c.b. chassis	For direct connection
K3I050	496766	LON/Mimic Display converter	Interface between LON-Bus and Data Bus for K3R072 or B3R051
K3I110	528854	LON I/O card	16 programmable control in-/outputs
B3Q580	496177	Floor repeater panel	
B3Q590	496180	Floor repeater panel with control functions with Nordic lock	
B3Q595	534110	Floor repeater panel with control functions with KABA lock	
H23G230	475091	Plastic housing	
Z3I520	484969	Cable set to K3R072	Comprises 12 cables (2-wire with connector, length=0.5m)
Z3I530	484972	Adapter	To adapt flat cable to terminals
Z3B230	559001	Support plate-set	For K3I050 in H23G230
Z1B070	A5Q00001720	Mounting accessory for E3I040	For mounting in housing H28G200

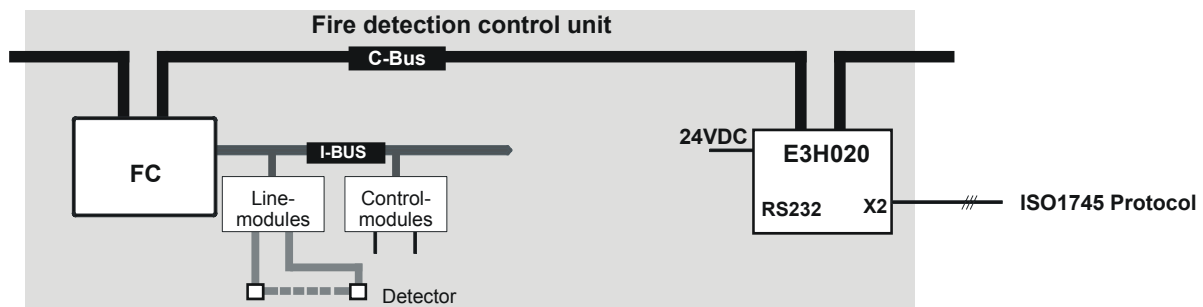
# 19 Gateway

## 19.1 Main features

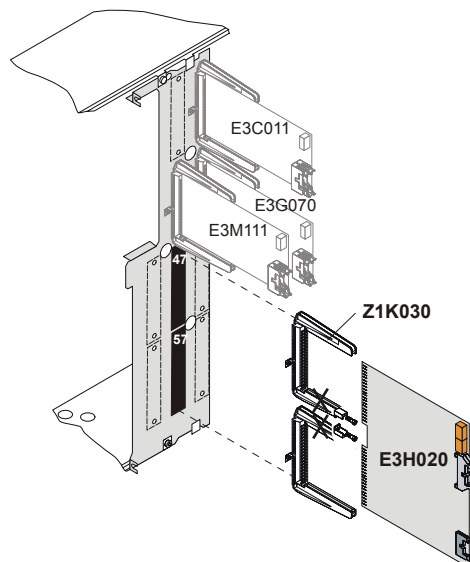
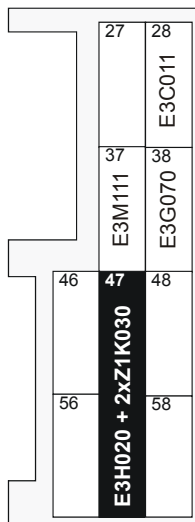
- Connection C-Bus network <-> Building management system via V28 interface (RS232) ISO1745 Protocol
- Per C-Bus network are several gateway possible, see chapter 8
- Install preferably in the fire detection system control unit cabinet



## 19.2 Application



Module chassis  
view modules





## 19.3 Modules

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Component	Order-No.	Description	Notes
E3H020	460475	Gateway module	Requires 2 module spaces
CKQ007.60	A5Q00005137	EPROM set	Software for ISO1745 Protocol for E3H020
Z1K030	484231	Terminal block with p.c.b. Holder	For direct connection

**Note:**

The E3H020 is factory side equipped with 4 RAMs (4x 512Kx8Bit) details see document 007831

## 20 Remote transmission

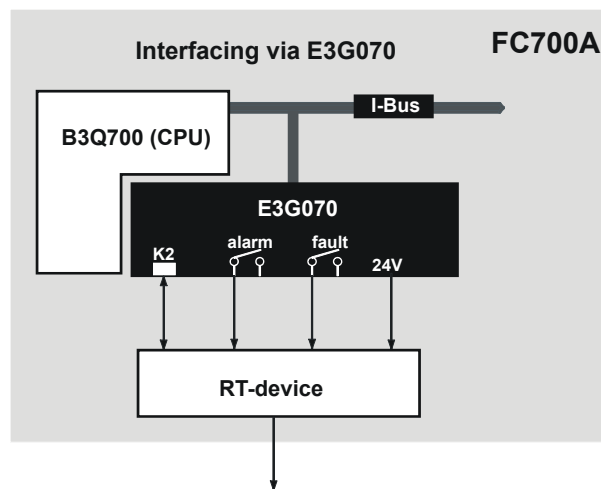
Most fire detection systems are linked to a remote transmission system. Therefore in case of alarm (alarm stage 2) the fire detection system must initiate the **remote transmission device** (RT-device).

### Remote transmission device

- Located in cabinet of control unit
- Required space depends on the type of remote transmission device
- Powered by 24VDC of the fire control unit
- Single channel (alarm + fault) or multi channel (several alarm channels)
- Disabling/enabling via B3Q700 (FC/FT)

### Interfacing

- Via output contacts and special control in-/outputs of the E3G070

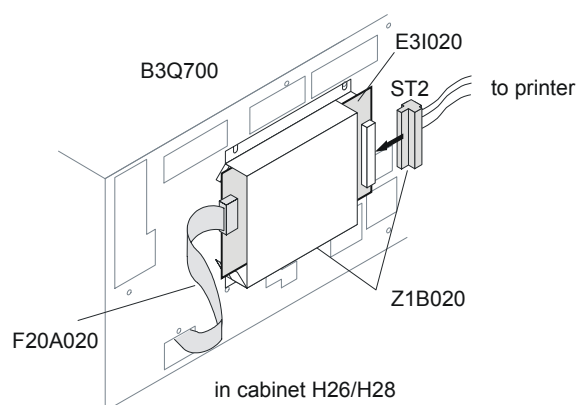
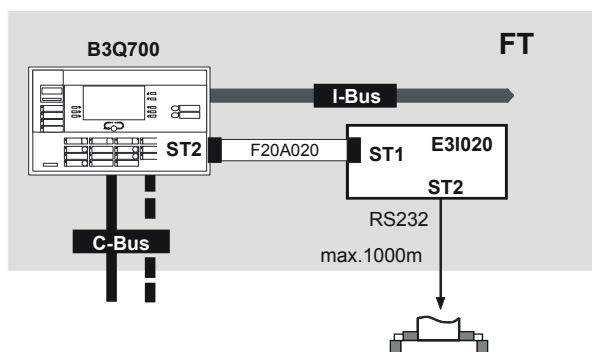


## 21 Printer interface

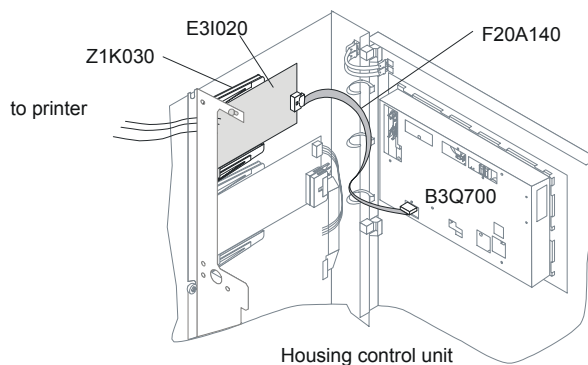
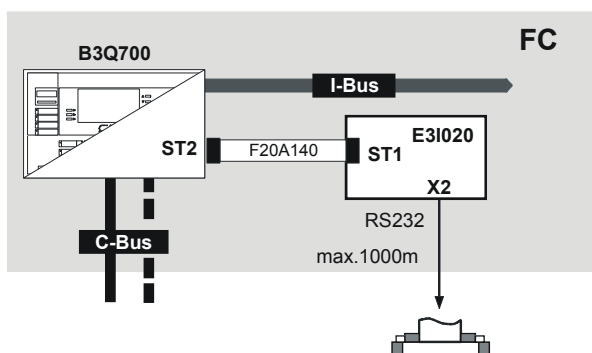
### 21.1 Features

- Provided with station types FC, FT
- Designed for commercially available printer with ISO-Latin1 or EPSON character set
- Always allocated to all existing AREAS for the station used
- The printer can be individually switched on/off via operating terminal
- The event memory can be printed only if the printer is connected to a station FC or FT

### 21.2 Application variant FT



### 21.3 Application variant FC



### 21.4 Modules

Component	Order-No.	Description
E3I020	460239	RS232 module
Z1B020	475907	Mounting accessories
F20A020	476317	Flat cable 'Micro' 20 conductors, 0.165m
Z1K030	484231	Terminal block with p.c.b. Holder
F20A140	496863	Flat cable 'Micro' 20 conductors, 0.650m

#### Notes

Level adaptation HCMOS -> RS232

To mount E3I020 at the rear of B3Q700 (FT)

To mount E3I020 on the module space Pos.27

## 22 Power supply

### 22.1 Concept

The power supply for the FC700A fire detection system consists of:

- **Converter** (mains voltage -> system voltage 29,6V)
- **Battery charging unit** (by means of E3C011)
- **Batteries (lead)** (capacity as required)

### 22.2 Special functions

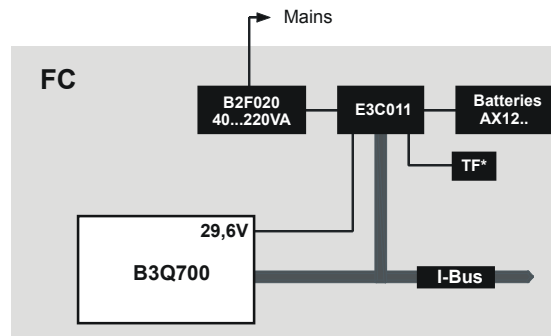
- Automatic battery load test
- Battery charging characteristic can be programmed according to make

### 22.3 Application

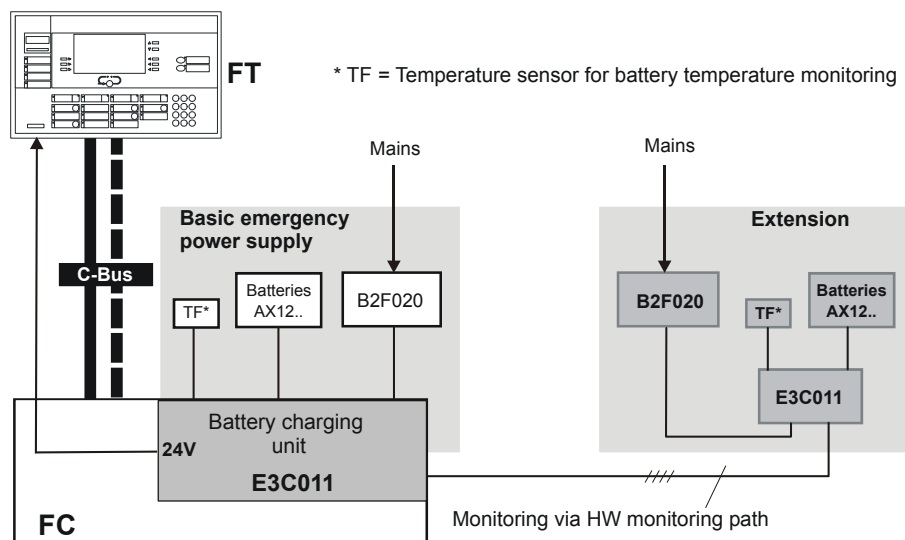
- Determine required battery capacity individually -> see chapter 23
- Max. 27Ah per battery charging unit (> 27Ah = auxiliary power supply)
- Parallel operation of several battery charging units possible
- Battery lead without EMI-protection (battery cannot be mounted separately)

### 22.4 Power supply for the control unit

- Battery charging module E3C011 required



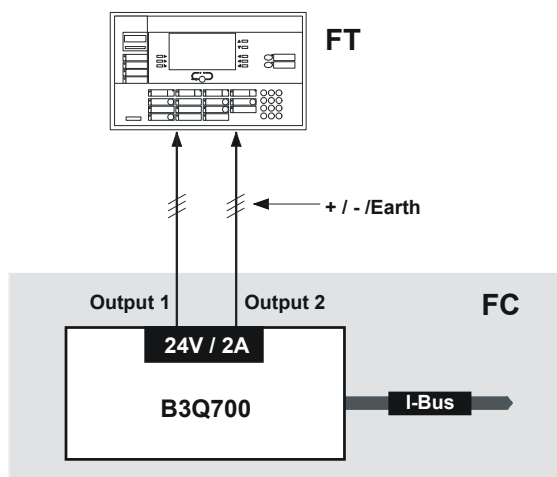
### 22.5 Auxiliary power supply



## 22.6 Modules

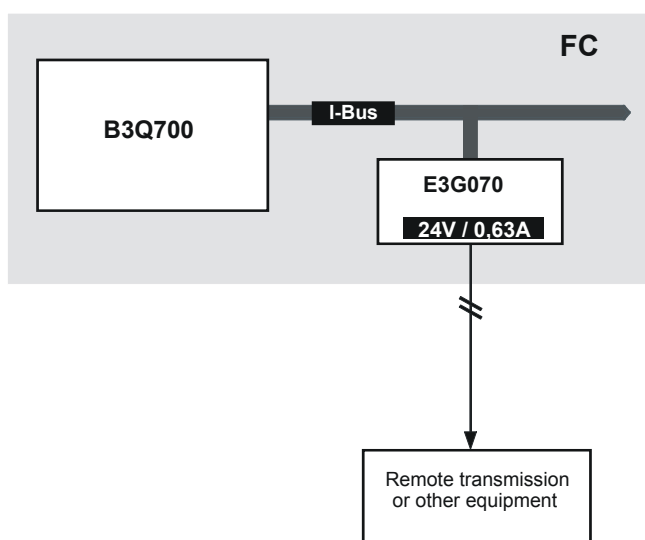
Component	Order-No.	Description	Notes
B2F020	470588	Converter 115/230VAC -> 29,6VDC 6A (... 220VAC)	
E3C011	505479	Battery charging unit	
Z3I470	484341	Cable set with card holder	
AX1201	225487	Battery 12V / 27Ah	Capacity based battery make 'ALARMCOM' (FIAMM)
AX1210	475570	Battery 12V / 15Ah	

## 22.7 Operation with power supply from control unit



**Note:** A 2nd supply output is only necessary for operating units, which must comply with EN54 (at least 1 operating unit per system)

## 22.8 Power supply for remote transmission equipment and accessories



## 23 Emergency power supply

### 23.1 Specifying battery capacity

#### 23.1.1 Battery rated capacity

- The battery rated capacity is based on the discharge over a period of 20 hours
- Faster discharge causes a loss of capacity:
  - Discharge over 12-hour period: 9% loss (K = 1.1)

#### 23.1.2 Ageing of battery

- With increasing age, the battery suffers a loss of capacity
  - Allow a safety factor for ageing  
(Total quiescent current  $\times$  1.25 or battery capacity  $\times$  0.8)
  - > 24h in conformity with DIN VDE 0833, part 2, no safety factor is necessary

#### 23.1.3 Calculation

Battery capacity must be calculated individually!

Formula:  $Ah = A \times h \times 1.25$  (poss.  $\times K$ )

Ah = Battery capacity in Ah

A = the sum of the quiescent current for all modules

h = Required operating period in hours

1.25 = Safety factor for ageing

K = Capacity loss if discharge is over considerably less than 20 hours

### 23.2 Capacity values for standard configurations

Configuration		Quiescent current	Battery capacity requirement for		
			12h	24h	72h
128 detectors addressable	7 outputs	235mA	3,8Ah	7,0Ah	16,9Ah
16 collective lines	7 outputs	315mA	5,1Ah	9,4Ah	22,6Ah

#### Notes:

- Equipped with 1 control terminal B3Q700
- Discharge over a 12-hour period, 9% loss of capacity taken into account
- Factor 1.25 for ageing taken into account at 12h and 24h (72h without safety factor)
- Without remote transmission equipment
- Only quiescent current taken into account

## 23.3 Quiescent current table

- Quiescent current when on battery operation (24V)
- As basis for individual calculation of emergency power supply
- The current for the 5V supply is included in these values

Module	Quiescent current at 24VDC (typical)	Additional current with alarm condition
B2F020	0	0
B3Q700	100mA LCD backlight 'inactive' (active = + 200mA)	+ 230mA
B3Q580	20mA	+ 160mA
B3Q590/595	18mA	+ 167mA
B3R051	40mA all LEDs inactive	+ 2mA per activated LED
E3C011	20mA	0
E3G050	10mA all relays inactive	+ 11mA per activated relay
E3G060	25mA all control lines terminated	+ 23mA per activated control line, without external load
E3G070	25mA control line 'Horn' terminated	+ 34mA without external load (horns etc.)
E3H020	100mA	0
E3I020	25mA	0
E3L020	22mA	+ ...mA depends from the activated device
E3L030	18mA	+ 40mA without external load (FBF, HM, FSK)
E3M080	85mA 37mA + 6mA per terminated line	+ 10mA per line in alarm
E3M111	210mA (=50mA + 0,31mA per D-Bus device) 1) (without external 24V load)	0
K3G060	6mA	+ 3mA per relay
K3R072	40mA	+ 2mA per activated LED 0 per activated relay
Z3B171	0	+ 27mA per activated relay
E3I040	15mA without external 24V load	0
K3I050	15mA	+ 0mA or 4mA per activated LED
K3I110	24mA max. 184mA all relay activated incl. service LED	+ 10mA per activated relay + 0,5mA per input with closed contact

1 Only valid for device with APMK = 1 (multiply value for devices > 1)

## 24 Alarm concept

- The alarm concept must be worked out individually for each system
- The important thing is to pass on the alarm message quickly to the appropriate group of recipients

The requirements vary between

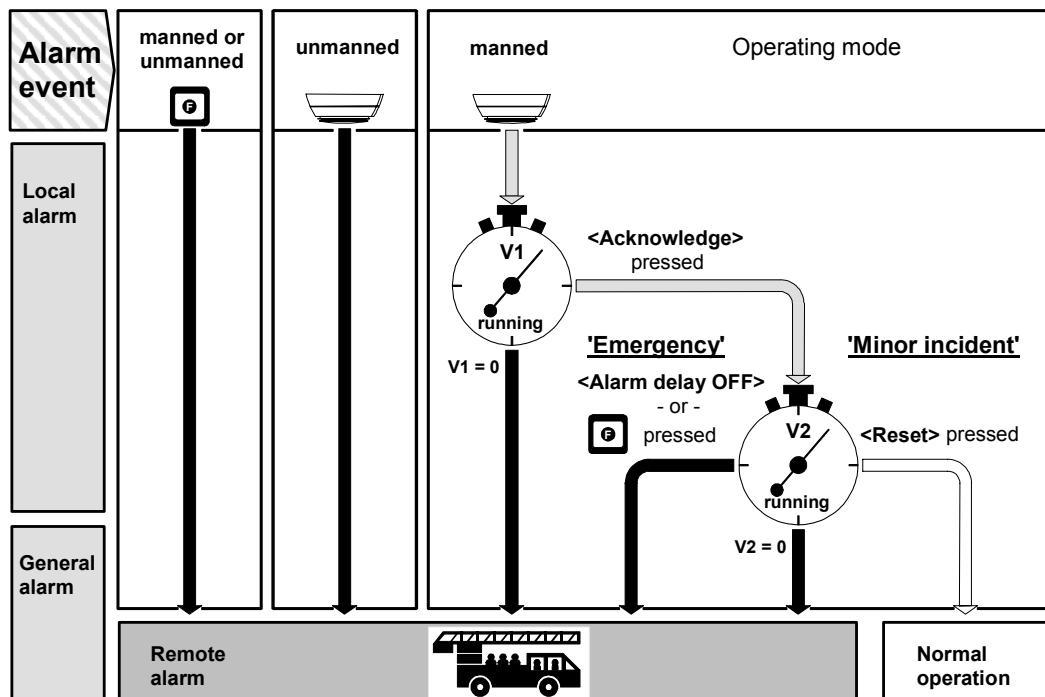
- 'Discreet alerting' of the reconnaissance squad, e.g. via staff paging system
- 'Alarm / evacuation' for people familiar with the location
- 'Alarm / evacuation' for people unfamiliar with the location
- 'Area evacuation', e.g. building storey

### 24.1 Cerberus Alarm Concept (CAC)

- The Cerberus alarm concept prevents the unnecessary turnout of the fire department for minor incidents
- The CAC is based on an alarm organization involving the presence or absence of personnel:
  - **Presence** of operating personnel or "Day"
  - **Absence** of operating personnel or "Night"
- The response of the operating personnel is monitored by two independent time circuits (V1 and V2) monitored
- The CAC is an integrated part of the FC700A control unit. The required parameters can be entered via the user functions

### 24.2 Principle of the Cerberus alarm concept

- During the "Day" operating mode, if an alarm is activated its source is located and the decision is taken "Emergency" or "Minor incident"
- During "Night" operating mode, all signals immediately generate a "Remote alarm"
- The activation of a manual call point always immediately generates a "Remote alarm"





## 24.3 Determine the alarm organization

---

- The FC700A fire detection system has up to 64 programmable organization levels (AREAS)
- A number of "Alarm variants" are possible (can be selected per ZONE)
- The time countdown memories "V1" and "V2" must be specified individually
- The time countdown memory "V2" can be defined per ZONE (if required)
- Various special local functions are provided
- The alarm organization is programmed individually (via maintenance PC)

## 24.4 Organization of system operation

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- The place of operation of the fire detection system must be determined from an organizational point of view
- If required a second operating facility must be provided
- If operating units are particularly exposed, they must be fitted with a lockable Plexiglas door (H26T030 + Z3S200)
- The type of event and the location are displayed on the operating unit in plain text
- The locations (rooms etc.) are individually defined by means of the "User text" (via maintenance PC)
- If required, an additional **event-related instruction**, a so-called counter-measures text, can be allocated
- The fire detection system may only be operated by instructed personnel (operating access is therefore protected by password or key switch)

→ Details of control terminal FT700A see chapter 12

## 25 Commissioning

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The FC700A fire detection system is designed for rational systems engineering. **Connection work** at the control unit can be **due by non-specialist personnel** (e.g. outside electricians). However, co-ordinated supervision is still essential. Specially trained personnel with a maintenance PC are required for commissioning (service engineer).

→ Details see document 007828

## 26 Parameterization, Flash programming

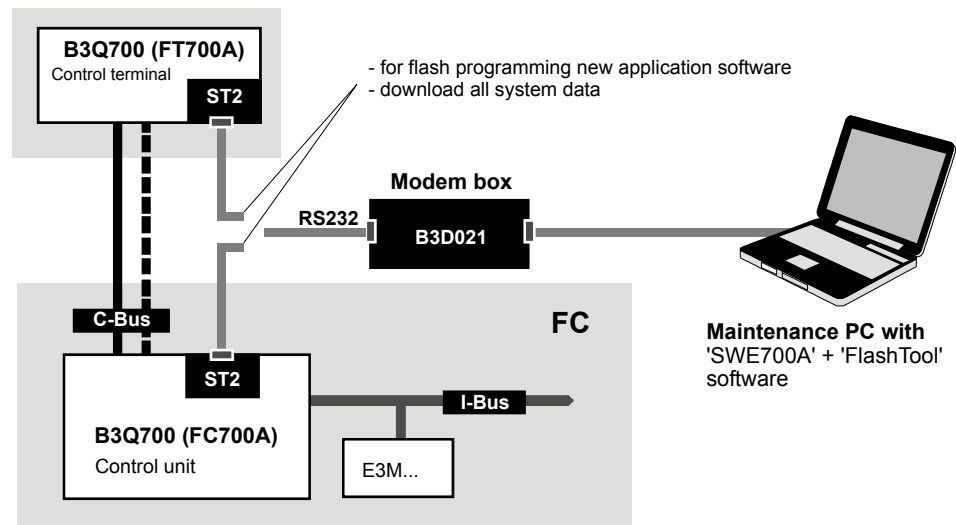
- Parameters are set for the FC700A fire detection system via the maintenance PC by means of the software tool set 'SWE700A'.
- Online-Help text



Flash programming is only relevant if B3Q700 is used as replacement for FC700A

- New software is programmed by means of the 'Flash Tool' software. For the modules B3Q700 the application software is now loaded into the Flash ROM via the maintenance PC by means of the 'Flash Tool' software.

→ Details see Online-Help in SWE700A



### 26.1 Functions

- Load new application software (Flash) if necessary
- Prepare/supplement structure of the system
- Define user functions (system-specific)
- Specify/correct user text
- Detector localization
- Data transfer of user functions to control unit

### 26.2 Modules

Component	Order-No.	Description	Notes
B3D021	505259	Modem box for SWE700A (DUAL RS232 ITF)	Complete with flat cable 20 conductors, L=0.2m
-	505330	Flat cable L=0,2m	As spare part
M3C700	A5Q00004798	USB Dongle	Key for SWE700A

## 27 FC700A modules in alphabetical order

Component	Order-No.	Description	Notes
AX1201	225487	Battery 12V / 27Ah	Capacity based battery make 'ALARMCOM' (FIAMM)
AX1210	475570	Battery 12V / 15Ah	
B2F020	470588	Converter 115/230VAC -> 29,6VDC 6A (...220VAC)	
B3D021	505259	Modem box for SWE700A (DUAL RS232 ITF)	Complete with flat cable 20 conductors, L=0.2m
B3Q580	496177	Floor repeater panel	With Nordic lock With KABA lock Operating unit
B3Q590	496180	Floor repeater panel with control functions	
B3Q595	534110	Floor repeater panel with control functions	
B3Q700	A5Q00004719	Control terminal FT700A	For control unit Software for ISO1745 Protocol for E3H020 For control terminal
B3R051	490513	Parallel indicator panel '2x24 LEDs'	
CIY00760	(OSS)	Flash program file	
CKQ007.60	A5Q00005137	EPROM set	8 control output contacts 6 monitored control lines for alarm equipment Included in FC700A-1 package Requires 2 module spaces For the connection of a printer Converter between I-Bus and LON-Bus 16 control inputs or outputs
CTY00760	(OSS)	Flash program file	
E3C011	505479	Battery charging unit	
E3G050	460255	Control module 'Contacts'	For collective detectors For addressable detectors From B3Q700 (FT) to K3R072/B3R051 From B3Q700 (FT) to K3R072/B3R051 Link between E3I020 -> B3Q700, if E3I020 on the rear of B3Q700 (FT)
E3G060	542539	Control module 'monitored'	
E3G070	546661	Control module 'universal'	
E3H020	460475	Gateway module	50-wire, 24 red LEDs, cable length 1m Including B3Q700, H23B010, B2F020, E3C011, Z3I470, E3G070, Z3I380, 2x Z3I1050, 1x Z3I1060 pre-wired
E3I020	460239	RS232 module	
E3I040	499310	LON module	
E3L020	546645	Control module 'Driver'	For control terminal B3Q700 (FT) For parallel indicator panel B3R051 As spare part For H28T110 For additional indicators and operating units For recessed mounting of cabinet H23G230 For recessed mounting of cabinet H23G230 For recessed mounting of cabinet H23G230 For remote control terminal B3Q700 (FT) Incl. mounting accessories For various applications
E3L030	475994	Control module VdS	
E3M080	460268	Line module SynoLINE600/-Ex	
E3M111	511531	Line module SynoLOOP	For recessed mounting of cabinet H28G200 Door without cut-out Option to K3R072 Interface between LON-Bus and Data Bus for K3R072 or B3R051 16 programmable control in-/outputs Comprises 12 cables (2-wire with connector, length=0.5m) Key for SWE700A For 1 H28G200 cabinet (poss. required) Essential when mounting E3I020 on the rear terminal of B3Q700 (FT) Essential when mounting E3I040 in housing H28G200
F12A100	495275	Flat cable Micro 12-pin, 0.4m	
F12A470	495288	Flat cable Micro 12-pin, 1.5m	
F20A020	476317	Flat cable micro 20 conductors 0.165m	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
F20A140	496863	Flat cable 'Micro' 20 conductors, 0.650m	
F50F410	529141	LED flat cable for K3R072	
FC700A-1	A5Q00004734	Control unit pre-assembled	
FCA725	A5Q00004833	Inscription set 'Spanish'	For recessed mounting of cabinet H28G200 Door without cut-out Option to K3R072 Interface between LON-Bus and Data Bus for K3R072 or B3R051 16 programmable control in-/outputs Comprises 12 cables (2-wire with connector, length=0.5m) Key for SWE700A For 1 H28G200 cabinet (poss. required) Essential when mounting E3I020 on the rear terminal of B3Q700 (FT) Essential when mounting E3I040 in housing H28G200
FCA775	A5Q00004834	Inscription set 'Italian'	
FCA785	A5Q00004835	Inscription set 'polish'	
G2A130	475088	Adapter plate 19"/6HE	For recessed mounting of cabinet H28G200 Door without cut-out Option to K3R072 Interface between LON-Bus and Data Bus for K3R072 or B3R051 16 programmable control in-/outputs Comprises 12 cables (2-wire with connector, length=0.5m) Key for SWE700A For 1 H28G200 cabinet (poss. required) Essential when mounting E3I020 on the rear terminal of B3Q700 (FT) Essential when mounting E3I040 in housing H28G200
G2A140	484228	Adapter plate 19"/6HE	
H23B010	476210	Cover plate for FC700A	
H23B020	476278	Cover plate	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
H23G230	475091	Plastic cabinet	
H23U220	379126	Recess box to B3R051	
H23U230	532879	Recess box to B3Q580/590/595	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
H23Z230	532882	Cover frame to B3Q580/590/595/B3R051	
H26G220	462800	Plastic cabinet	
H26T030	570530	Plexiglas door	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
H28G200	409944	Cabinet (without door)	
H28T110	474982	Cabinet door for B3Q700 / B3R051	
H28T120	474995	Cabinet door for 4 B3R051 parallel indicator panel	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
H28Z010	410593	UP frame set	
H38G310	484930	Housing set	
K3G060	528786	Relay card incl. flat cable	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
K3I050	496766	LON/Mimic Display converter	
K3I110	528854	LON I/O card	
K3R072	528605	Mimic Display activation	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
M3C700	A5Q00004798	USB Dongle	
UPR28	430434	Recess box	
Z1B020	475907	Mounting accessories for E3I020	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
Z1B070	A5Q00001720	Mounting accessory for E3I040	
Z1K030	484231	Terminal block with p.c.b. holder	
Z2G030	378198	Hinge 19"/6HE	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
Z3B171	484383	Relay module 1x 250VAC/10A	
Z3B230	559001	Support plate-set	
Z3I1050	A5Q00004717	Connection cable 19 conductors	Consisting of hinge and spacer profile To switch from external voltage For K3I050 in H23G230 With terminal block and p.c.b. Holder For additional modules To connect modules at the bottom with modules at the
Z3I1060	A5Q00004722	Terminal block, 2x20 terminals in two levels	
Z3I380	475567	Cable set I-Bus long	

<b>Component</b>	<b>Order-No.</b>	<b>Description</b>	<b>Notes</b>
Z3I470	484341	Cable set with card holder	top
Z3I481	491185	Cable set for control terminal FT700A in H28G200	Comprising -> Terminal block with made-to measure cable, cleat and cable clips
Z3I520	484969	Cable set for K3R072	Comprises 12 cables (2-wire with connector, length=0.5m)
Z3I530	484972	Adapter	To adapt flat cable to terminals
Z3S200	570349	Key switch module (KABA)	For operating access

## 28 Spare parts

Component	Order-No.	Description	Notes
-	505739	Buzzer 12-36V 3500Hz 85DB	for B3Q700
-	463686	Card holder	for Z1K030/Z3I1050
-	462790	Cover frame (plastic)	for B3Q700
-	463809	Cover frame (plastic)	for B3R051/B3Q580/590/595
-	564669	Duplicate key DOM at locking 2C 2500	for H28G200
EOL22	516222	End of line element	
-	505330	Flat cable L=0,2m	for B3D021
-	471451	Flat cable I-Bus + supply cable 'short'	for I-Bus modules
-	467478	Flat cable micro 20 conductors, 0.17m	for E3I020
-	145635	Fuse 0.25A slow blow	for E3G070
-	145606	Fuse 0.4A slow blow	for B3R051, K3R072, K3G060
-	145648	Fuse 0.5A slow blow	for E3G050
-	450388	Fuse 0.5A slow blow, with high breaking capacity	for B3Q700, E3L020
-	145680	Fuse 0.63A slow blow	for E3G070
-	467177	Fuse 0.8A slow blow, with high breaking capacity	for B3Q700, E3H020
-	450391	Fuse 1.0A slow blow, with high breaking capacity	for E3M111
-	424246	Fuse 1.25A quick acting	for E3L020
-	450414	Fuse 2.0A slow blow, with high breaking capacity	for E3H020, E3L030, E3G060/70
-	338879	Fuse 5A slow blow	for E3G070
-	145729	Fuse 6.3A slow blow	for E3G060
-	433363	Fuse 6.3A slow blow, with high breaking capacity	for E3C011
KABA100	163837	Key 'KABA 8' (#100)	for B3Q595
-	484396	Key 'Nordic'	for B3Q590
-	459729	Lithium battery 3V, to solder	for B3Q700
-	475774	PTC, 2k $\Omega$ , 0.5%, with cable	for E3C011
-	475237	Terminal block, pluggable, 12 cont., orange	for E3I020
-	495440	Terminal block, pluggable, 3 cont., orange	for E3H020
-	483669	Terminal block, pluggable, 4 cont., grey	for B3Q700 (C-Bus)
-	463977	Terminal block, pluggable, 4 cont., orange	for all I-Bus modules (K1)
-	483672	Terminal block, pluggable, 4 cont., black	for B3Q700 (power supply monitoring)
-	463951	Terminal block, pluggable, 5 cont., orange	for B3Q700 (emergency operation)
-	463964	Terminal block, pluggable, 6 cont., orange	for B3Q700, B3R051, K3R072, E3G070
-	460051	Transzorb diode bidirectional 20V, 5%, 600W/ms	for E3M080
-	319351	Zero-Ohm resistor	for various modules (jumper)
-	505330	Flat cable L=0,2m	for B3D021

## 29 Configuration sheets

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The following pages can be copied or used as a basis for individual local requirements.

The configuration for specific systems is entered on these pages (location of units, number and type of modules, etc.).

### 29.1 List of configuration sheets

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#### **FC700A**

- Configuration with control terminal B3Q700 as main CPU (control unit)
- Details see page 64

#### **Auxiliary power supply**

- Details see page 65

#### **FT700A**

- Configuration for control terminal B3Q700
- Details see page 66

#### **B3Q580/590/595, B3R051**

- Configuration display & operating terminals
- Details see page 67

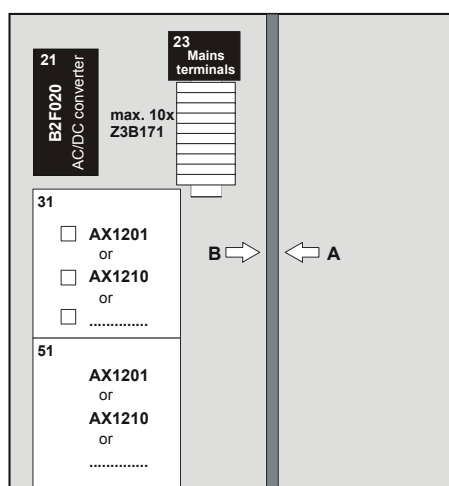
#### **K3I110, K3I050, K3R072, K3G060 etc.**

- Externally placed modules
- Details see page 68

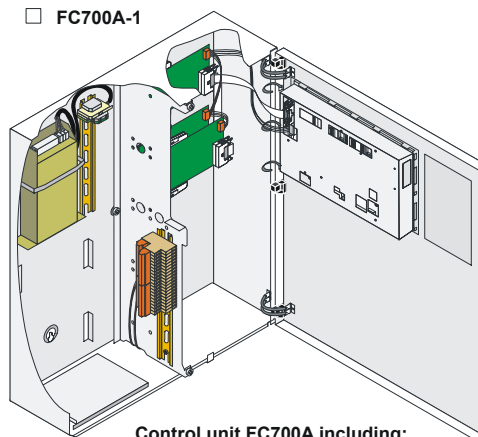
# 30 Control unit FC700A

Type of detection line	SynoLOOP	SynoLINE600/-Ex
Number of detector addresses		
Number of lines		

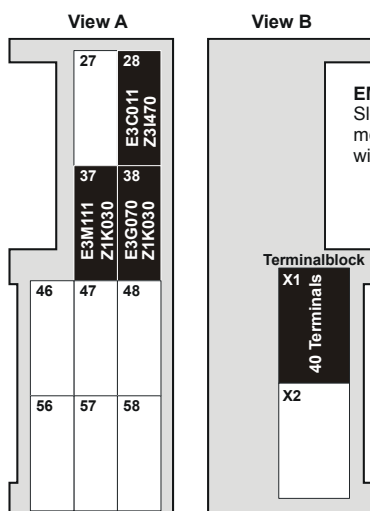
Fire control installations	for 30V	for 250V
Number of control outputs		



FC700A-1



Control unit FC700A including:  
E3C011, E3G070, E3M111,  
40 Terminals, B2F020  
pre-wired



**EMC Precaution:**  
Slot rows with E3C011  
module must not be fit  
with either E3I040 module

Control unit		
FC700A-1	A5Q00004734	

Inscription sets		
FCA...	A5Q0000....	

Modules		
E3M111	511531	
E3M080	460268	
E3L020	546645	
E3G050	460255	
E3G060	542539	
E3I020	460239	
E3I040	499310	
E3H020 *	546658	
E3L030 *	475994	

\* requires 2 module spaces

Cable, terminals, relay		
Z1K030	484231	
Z3I1050	A5Q00004717	
Z3I1060	A5Q00004722	
Z3I380	475567	
Z3B171	484383	

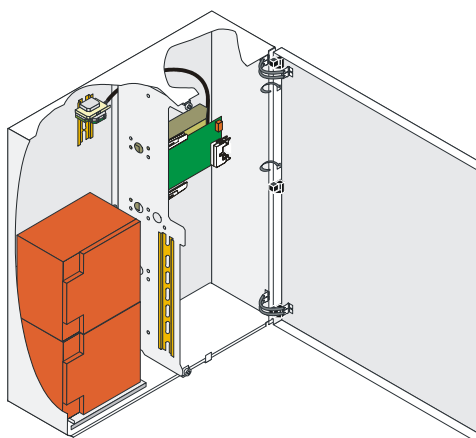
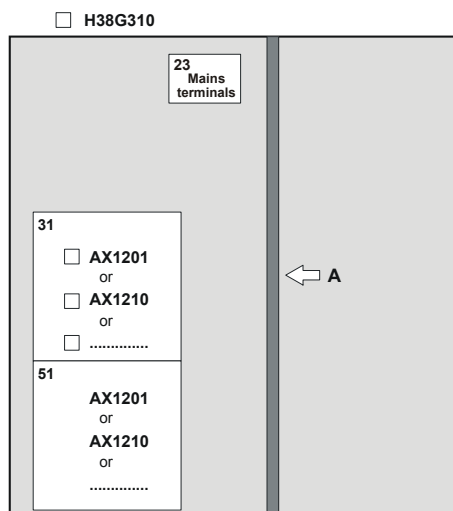
Batteries		
AX1201	225487	
AX1210	475570	

EPROM to E3H020		
CKQ007.60	A5Q00005137	

→ Details see chapter 10



# 31 Auxiliary power supply



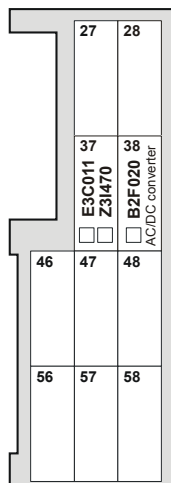
Housing		
<b>H38G310</b>	484930	

Power supply		
<b>B2F020</b>	470588	
<b>E3C011</b>	505479	

Cable set		
<b>Z3I470</b>	484341	

Batteries		
<b>AX1201</b>	225487	
<b>AX1210</b>	475570	

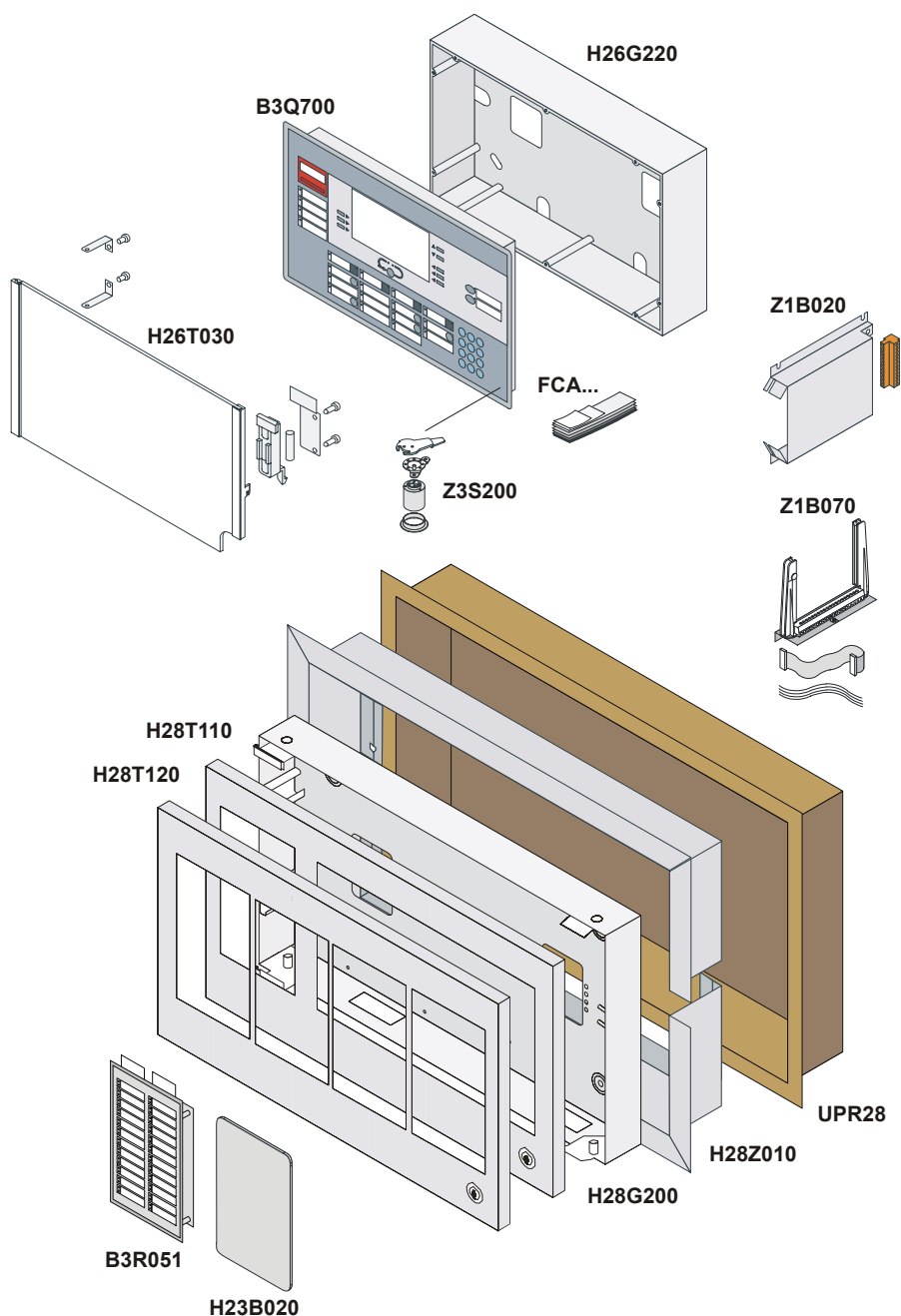
View A



→ Details see chapter 11

## 32 Control terminal FT700A

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FT700A																



→ Details see chapter 12

Control terminal 'FT'		
B3Q700	A5Q00004719	

Inscription sets		
FCA...	A5Q0000....	

Accessories		
H26T030	570530	
Z3S200	570349	

RS232 interface & accessories		
E3I020	460239	
Z1B020	475907	
F20A020	476317	

LON interface & accessories		
E3I040	499310	
Z1B070	A5Q0001720	

Cabinet H26		
H26G220	462800	

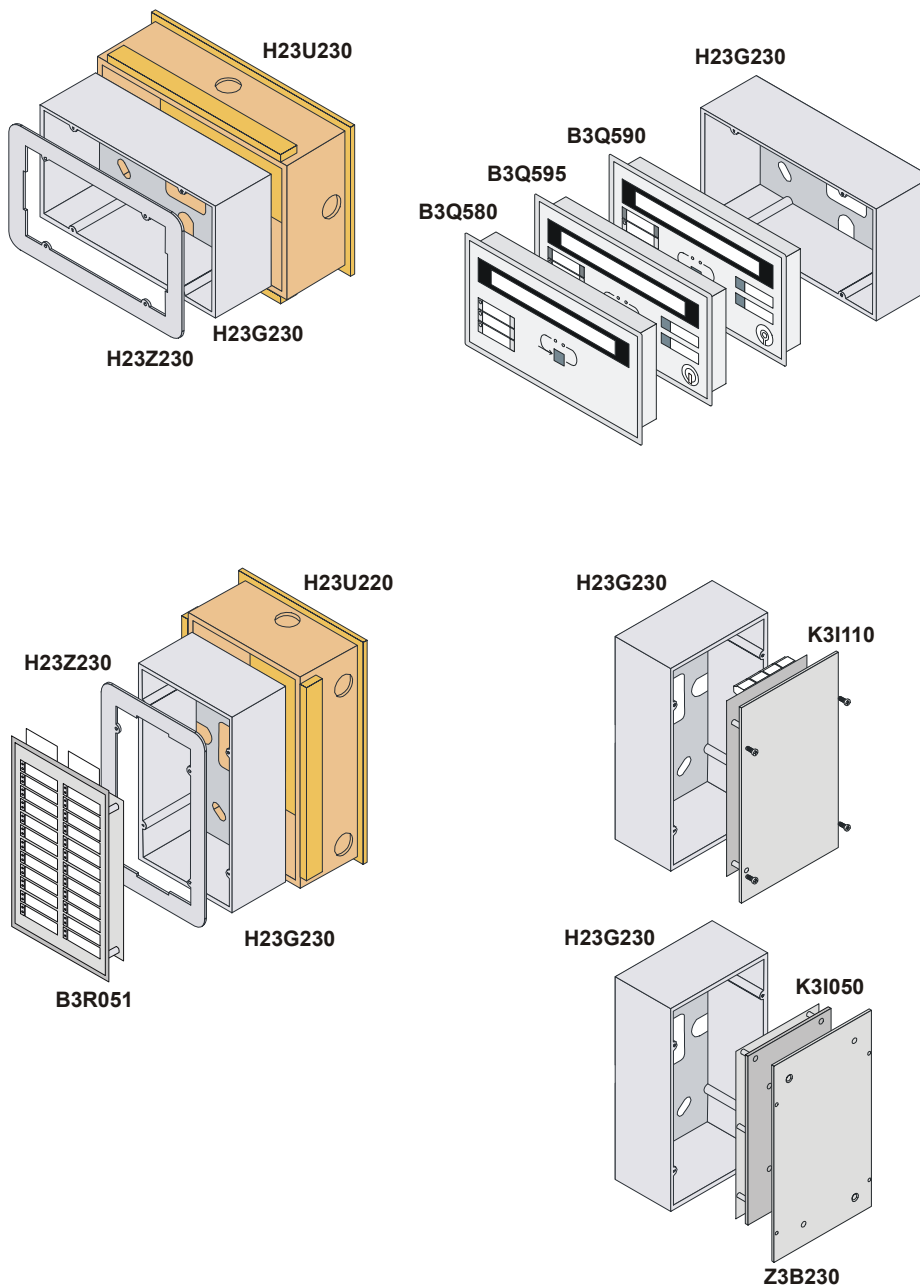
Cabinet H28		
H28G200	409944	
H28T110	474982	
H28Z010	410593	
UPR28	430434	

Additional equipment		
B3R051	490513	

Cover plate		
H23B020	476278	

Cable set		
Z3I481	491185	

### 33 Display & operating terminals



Floor panels		
<b>B3Q580</b>	496177	
<b>B3Q590</b>	496180	
<b>B3Q595</b>	534110	

Cabinet		
<b>H23G230</b>	475091	

Accessories for recess mounting		
<b>H23Z230</b>	532882	
<b>H23U230</b>	532879	
<b>H23U220</b>	379126	

LON/Mimic display converter		
<b>K3I050</b>	496766	

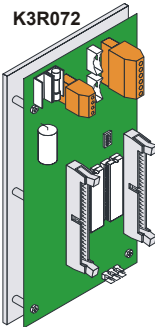
LON I/O card		
<b>K3I110</b>	528812	

Support plate		
<b>Z3B230</b>	559001	


Additional equipment		
<b>B3R051</b>	490513	

→ Details see chapter 18

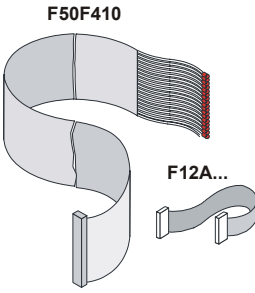
# 34 Externally placed modules



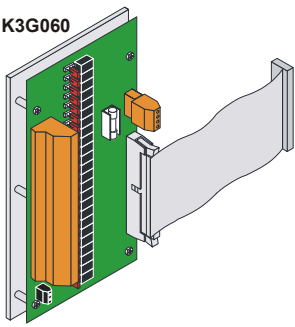
K3R072




Z3I530



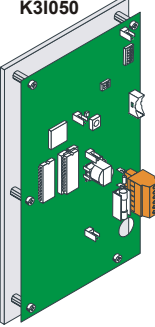
F50F410




K3G060



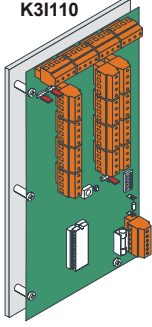
F12A...



K3I050



Z3I530



K3I110

Mimic & accessories		
K3R072	528605	
Z3I520	484969	
Z3I530	484972	
Relay card		
K3G060	528786	
Flat cable, LED flat cable		
F12A100	495275	
F12A470	495288	
F50F410	529141	
LON/Mimic display converter		
K3I050	496766	
LON I/O card		
K3I110	528812	

→ Details see chapter 17.7 / 17.9 / 18



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